


ZANZIBAR PROTECTORATE

ANNUAL
MEDICAL AND SANITARY REPORT

FOR THE

Year ended 31st December, 1936



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OFFICE OF THE
DIRECTOR OF MEDICAL SERVICES,

Zanzibar, 7th April, 1937.

Sir,

I have the honour to submit for the information of His Excellency the British Resident and for transmission to the Right Honourable the Secretary of State, the Medical Report on the Health and Sanitary Conditions of the Zanzibar Protectorate for the year 1936, together with the Returns, etc., appended thereto.

I have the honour to be,

Sir,

Your obedient servant,

S. W. T. LEE,
Acting Director of Medical Services.

THE HONOURABLE,

CHIEF SECRETARY TO THE GOVERNMENT,

ZANZIBAR.

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PEMBA

Scale 8 Miles to 1 Inch

Ras Mgozidshu

0 1 2 3 4 5 6 7 8 Miles

Njao, Fundo, Weti, Limboni, Konda, Mgozi Forest, Mlangotwani, Kinyu, Wingwi, Kojani, Piki, Stambuli, Ziweni, Ole, Nkanjuni, Shongiji, Mkomduu, Mesale, Chake Chake, Sinogoni, Changa, Pangini, Howachani, Kionwa, Mkoani, Marongwa, Mtumbini, Fufuni, Kinywa, Kweni, Panza.

Legend: Roads Water Roaded, Water const.

39°35' 40° 45° 50° 55°

25° 30° 35°

P.W. D. Zanzibar 1931

[illegible]

SECTION I.

(A) STAFF.

Principal Appointments, Promotions, Changes, etc.

| <i>Appointments:—</i> | Date. |
|---|-----------------|
| Dr. S. W. T. Lee, Senior Medical Officer, to be Medical Officer of Health and Port Health Officer, Zanzibar ... | 25- 4-36 |
| Dr. W. A. Young, to be District Medical Officer, Zanzibar ... | 25- 4-36 |
| Dr. A. C. Freeth, to be District Medical Officer, Pemba ... | 15- 4-36 |
| Dr. R. Nicklin, to be Medical Officer, Pemba ... | 15- 4-36 |
| Dr. J. D. Robertson, to be Medical Officer-in-charge, Zanzibar Hospital ... | 14- 5-36 |
| Dr. A. C. Pilkington, to be Medical Officer ... | 17- 4-36 |
| Dr. A. C. Pilkington, to be District Medical Officer ... | 1- 6-36 |
| Dr. V. R. Sharp, to be Medical Officer ... | 2- 5-36 |
| Sergeant J. Elgie, to be Laboratory Assistant, Medical Department ... | 30- 5-36 |
| Miss R. V. Taggart, to be Nursing Sister ... | 14-11-36 |
| <i>Acting Appointments:—</i> | From. To. |
| Dr. W. A. Young, to act as Senior Medical Officer and Medical Officer of Health ... | 1-1-36 5- 4-36 |
| <i>Termination of Appointments:—</i> | |
| Dr. H. C. Quin, Medical Officer ... | 1- 5-36 |
| <i>Resignations:—</i> | |
| Miss J. A. Cooke, Nursing Sister ... | 1-11-36 |
| <i>Transfers:—</i> | |
| Dr. W. A. Young, Medical Officer, to be Senior Medical Officer, Tanganyika Territory ... | 15- 5-36 |
| <i>Secondments:—</i> | From. To. |
| Dr. D. D. McCarthy, Medical Officer-in-charge of Anti-malarial Survey ... | 1-1-36 31-12-36 |

(B) LEGISLATION AFFECTING PUBLIC HEALTH ENACTED DURING THE YEAR.

| | |
|---------------------------|---|
| Government Notice No. 9. | Recognized family Vaults—Public Health Decree (Cap. 60). |
| Government Notice No. 10. | Appointment of Cemetery—Public Health Decree (Cap. 60). |
| Government Notice No. 17 | Public Health (Disuse of family Vault) Order, 1936—Public Health Decree (Cap. 60). |
| Government Notice No. 18 | Public Health (Appointment of Cemeteries) Order, 1936—Public Health Decree (Cap. 60). |
| Government Notice No. 36. | Public Health (Offensive Trades) Sullage and Cesspits—Rules, 1936. |
| Government Notice No. 37. | Public Health (Offensive Trades) Sullage and Cesspits—Rules, 1936. |
| Decree | A Decree to amend the Dangerous Drugs Decree (Cap. 64). |
| Decree | A Decree to amend the Nursing Sisters (Retiring-allowances) Decree. |

(C) FINANCIAL.

TABLE OF ACTUAL EXPENDITURE.

| | £ | £ | £ | £ |
|--|---------|---------|---------|---------|
| | 1933 | 1934 | 1935 | 1936 |
| Medical Department ... | 49,294 | 37,846 | 36,575 | 38,098 |
| Municipal Votes controlled by Medical Department ... | — | 7,867 | 7,113 | 7,144 |
| Grants-in-aid ... | 1,711 | 1,675 | 1,716 | 230 |
| Total ... | 51,005 | 47,388 | 45,404 | 45,472 |
| Total Revenue of the Protectorate ... | 475,465 | 451,182 | 457,114 | 475,444 |
| Percentage of Total to Total Revenue ... | 10.73 | 10.50 | 9.93 | 9.56 |
| Total Revenue of the Department ... | 3,527 | 3,855 | 3,993 | 3,696 |

SECTION II.

PUBLIC HEALTH.

GENERAL REMARKS.

Returns for the Year.—Detailed figures appear in Table A, Section VI at the end of the report. A comparison between those for 1936 and past years follows :—

| | 1932 | 1933 | 1934 | 1935 | 1936 |
|-----------------------------|---------|---------|---------|---------|---------|
| New Cases | 140,175 | 157,167 | 159,686 | 130,115 | 128,235 |
| In-patients | 4,534 | 4,815 | 4,463 | 3,853 | 4,413 |
| Total Attendances | 434,284 | 502,672 | 536,242 | 444,175 | 459,170 |
| Surgical Operations (major) | 1,399 | 1,320 | 1,299 | 1,151 | 1,016 |
| Surgical Operations (minor) | 2,812 | 2,340 | 3,370 | 2,683 | 2,295 |

The number of new patients treated continued to fall—especially in Zanzibar district dispensaries where regular weekly supervision reduced the numbers of the more obscure diagnoses and cut down the attendance figures of patients who were alleged to have been seen in past years. In fact dispensers worked considerably harder in 1936 than in the past because three sub-centres were developed in connexion with each rural dispensary. Possibly, too, the continued insistence on the practice of making those who could afford it pay a small fee has deterred some people from attending but, as all sick people are dealt with whether they pay or not, this regulation can have had little effect on the numbers of the real sick who attended; it may have served to keep away those people who appear to delight in attending for supplies of free medicine long after their illness has cleared up.

There has been a change already in the proportion in which the two sexes attended for treatment at government institutions as can be seen from the following table :—

| | 1932 | 1933 | 1934 | 1935 | 1936 |
|---------|-------|-------|-------|-------|-------|
| Males | 73.2% | 74.5% | 73.6% | 73.9% | 71.4% |
| Females | 26.8% | 25.5% | 26.4% | 26.1% | 28.6% |

This alteration can be attributed to the activities of the new Lady Medical Officer although she was only engaged in practice during the latter half of the year. As explained in Section V, she intends to expand her activities in the future but already, in Zanzibar, the increase from an average attendance of 45 women per day in June to 130 a day in December is significant.

The percentage of females amongst the new patients at the three main hospitals during the past two years were :—

| | Zanzibar | Chake Chake | Wete |
|------|----------|-------------|------|
| 1935 | 22% | 27% | 19% |
| 1936 | 40% | 27% | 20% |

The principal causes of deaths in Government hospitals during the last five years were :—

| | 1932 | 1933 | 1934 | 1935 | 1936 |
|---|------|------|------|------|------|
| Total deaths | 222 | 387 | 446 | 418 | 470 |
| Senility | 86 | 103 | 127 | 75 | 135 |
| Pulmonary tuberculosis | 40 | 52 | 50 | 50 | 49 |
| Pneumonia | 12 | 15 | 26 | 20 | 29 |
| Debility | 20 | 26 | 19 | 41 | 19 |
| Ankylostomiasis | 11 | 16 | 10 | 17 | 13 |
| Diseases of the Heart, Veins and Arteries | 8 | 14 | 15 | 11 | 11 |
| Malaria and Blackwater | 9 | 6 | 14 | 9 | 17 |
| Nephritis | 10 | 8 | 10 | 4 | 17 |

Old age is the most fatal complaint and it figures largely in the death returns because of the large number of aged people maintained in the Walezo poor house.

As in the past, the people who attended Government hospitals are drawn mostly from those who live in one of the four towns as they have, to some extent, got to the stage where they are willing to attend hospital when ill.

In the more remote rural areas most reliance is placed on the local witch doctor, which is unfortunate in a country where venereal diseases are assuming much importance, and where yaws and ankylostomiasis are common. So far there has been no evidence that any of the decoctions given or enchantments undertaken have affected the course of these diseases. But the rural dispenser has a long way to go to gain the confidence of the people to whom he should be attending and, it must be admitted, that the badly educated and rather aggressive type of man who was employed in the past will never achieve much. Under section V.B. the training of dispensers has been discussed and little progress can be expected in the rural dispensaries until more rural Sanitary Inspectors are available to assist in the supervision of the dispensers and a new batch of men has been properly trained for the work. Unsatisfactory dispensers are being eliminated gradually and the figures of attendances are now more accurate.

I. GENERAL DISEASES.

The diseases treated at the Government hospitals and dispensaries during the last five years are grouped in percentages of cases treated in the following table:—

| | 1932 | 1933 | 1934 | 1935 | 1936 |
|---|------|------|------|------|------|
| Endemic, Epidemic and Infectious diseases | 12% | 11% | 13% | 12% | 13% |
| Nervous system | 7% | 6% | 7% | 6% | 6% |
| Respiratory system | 8% | 7% | 7% | 8% | 7% |
| Digestive system | 31% | 26% | 27% | 30% | 26% |
| Skin and Cellular Tissues | 23% | 32% | 29% | 27% | 28% |
| External Causes | 8% | 7% | 7% | 8% | 8% |
| Others | 11% | 11% | 10% | 9% | 12% |
| | 100 | 100 | 100 | 100 | 100 |

The Epidemic, Endemic, and Infectious diseases group varies little from year to year in its relation to the total number of cases of all diseases treated. The largest numbers dealt with in this group were malaria, yaws and gonorrhœa.

Number of Cases and Deaths due to Epidemic, Endemic and Infectious diseases.

| | Total numbers. | Epidemic, Endemic and Infectious Diseases. | Deaths. |
|------|----------------|---|---------|
| 1932 | 140,175 | 17,140 | 69 |
| 1933 | 157,167 | 17,900 | 77 |
| 1934 | 159,686 | 19,833 | 90 |
| 1935 | 130,115 | 15,394 | 83 |
| 1936 | 128,235 | 16,638 | 99 |

General Diseases.—Numbered 2,107 with 11 deaths compared with 2,113 and 11 deaths in 1935.

Anæmia, 836 cases, and chronic rheumatism 485 cases, were the most common diseases in the group and as they were diagnosed almost entirely by rural dispensers the presumption is that they were most probably cases of ankylostomiasis and gonorrhœal arthritis.

A number of cases of indefinite avitaminosis were seen and treated but the model report is not framed to include this diagnosis and such cases are entered in Table VI under item XVI.

Affections of the Nervous System.—This group totalled 7,672, with 17 deaths compared with 8,438 cases in 1935. Diseases of the eye formed the largest subdivision, 3,566 as compared with 3,628 in 1935. Other minor affections as headache, neuralgia and insomnia accounted for 2,053 cases compared with 2,349 last year.

At the eye clinic in Zanzibar 961 new cases were treated and 9,101 re attendances were dealt with; 56 operations, mainly for cataract, were performed.

Affections of the Circulatory System.—767 cases were recorded, as against 960 in 1935. Diseases of the lymphatic system with 477 cases formed the largest group and were due chiefly to filarial infection.

Affections of the Respiratory System.—9,437 cases were seen as against 10,275 in 1935. Coryza, 2,573 and acute bronchitis, 6,023, almost monopolized

the group and they are synonymous terms is the minds of the rural dispensers who reported most of the cases.

Diseases of the Digestive System.—With 33,783 cases this forms the second largest group of diseases although the numbers dealt with are less than in 1935 when 38,569 cases were seen. The most important conditions are tabulated below :—

| | 1934 | 1935 | 1936 |
|-------------------------------|--------|--------|--------|
| Constipation ... | 16,654 | 12,539 | 9,985 |
| Ankylostomiasis ... | 12,577 | 13,665 | 12,608 |
| Dental Caries ... | 6,766 | 6,386 | 6,184 |
| Colic ... | 1,665 | 668 | 616 |
| Affections of the Pharynx ... | 1,515 | 1,366 | 1,046 |
| Ascariasis ... | 597 | 164 | 195 |

Ankylostomiasis still accounts for the largest number of cases but only a small proportion of cases of the diseases are seen as it is known that about 70% of the inhabitants of the Protectorate harbour these worms.

Diseases of the Genito-Urinary System.—3,087 cases were seen as against 3,774 cases in 1935. Schistosomiasis, ulcers of penis—which may have been venereal but were not so diagnosed in dispensaries—orchitis and hydrocele were the chief complaints.

Diseases of the Puerperal State.—These conditions treated in the government hospitals reached a total of 115 as compared with 111 in 1935. The work carried out by the Zanzibar Maternity Association is not included.

Affections of the Skin and Cellular Tissues.—Reached a total of 36,337, an increase over the 1935 figure of 35,186. Ulcers of various sorts totalled 22,417; under this head many minor septic cuts and abrasions are included so that, although a big sub-section, the conditions seen are not of a very disabling character though, occasionally, the large soup plate type of ulceration is encountered. 6,984 cases of scabies are recorded, a decline from 10,539 cases last year.

Diseases of the Bones and Organs of Locomotion.—Numbered 3,047 compared with 3,405 in 1935. Various minor complaints accounted for 2,026 of those cases.

Malformation.—Only five cases are recorded.

Diseases of Infancy.—79 cases were seen of which 55 were normal living babies born in hospitals.

Affections of Old Age.—312 cases are recorded and most of them were dealt with at the Walezo Infirmary for the Poor.

Affections Produced by External Causes.—10,664 cases were seen as compared with 11,016 seen in 1935. As usual minor injuries such as small cuts, bruises and contusions made up most of this total.

Diseases due to Ill-defined Causes and Diseases which have not Caused 10 Deaths.—Totalled respectively 1,184—mostly cases of debility due to un-stated causes—and 2,960 of which P.U.O. formed the majority of cases.

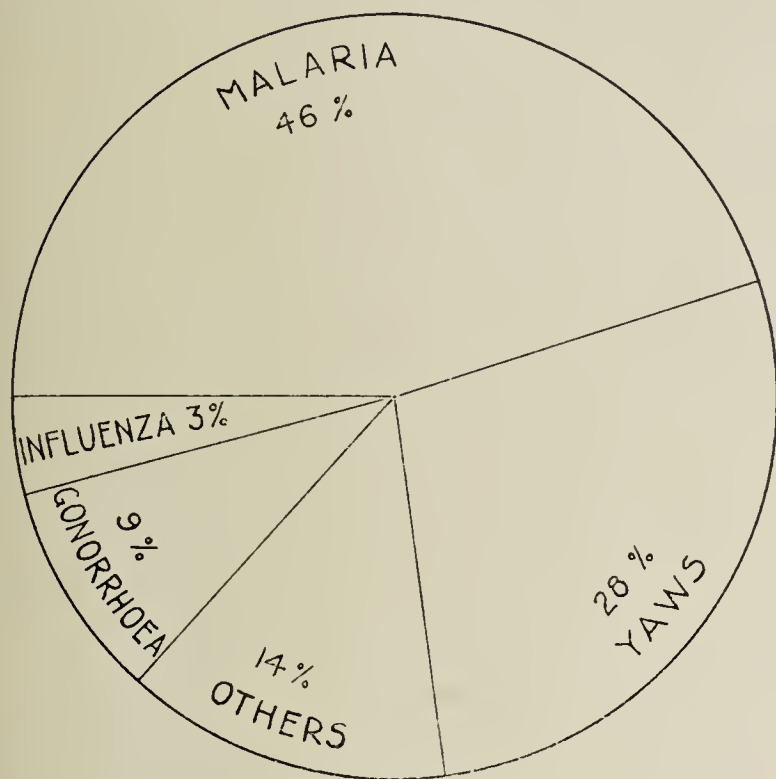
II. COMMUNICABLE DISEASES.

(a) MOSQUITO OR INSECT-BORNE.

Malaria.—The relative incidence of malaria in the Protectorate is seen from the following table :—

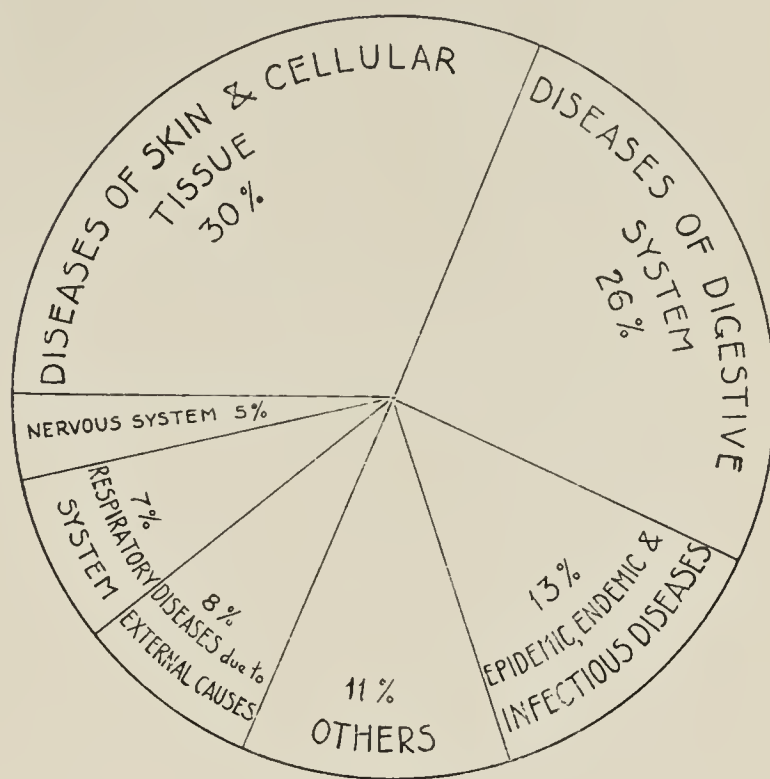
| | 1932 | 1933 | 1934 | 1935 | 1936 |
|--|-------|-------|-------|-------|-------|
| Total number of cases of malaria treated in all Government hospitals ... | 8,369 | 7,536 | 9,796 | 6,902 | 7,666 |
| Percentages of malaria cases to all diseases treated | 5.97 | 3.67 | 6.13 | 5.31 | 5.97 |

The Proportion of Epidemic, Endemic and Infectious Diseases.

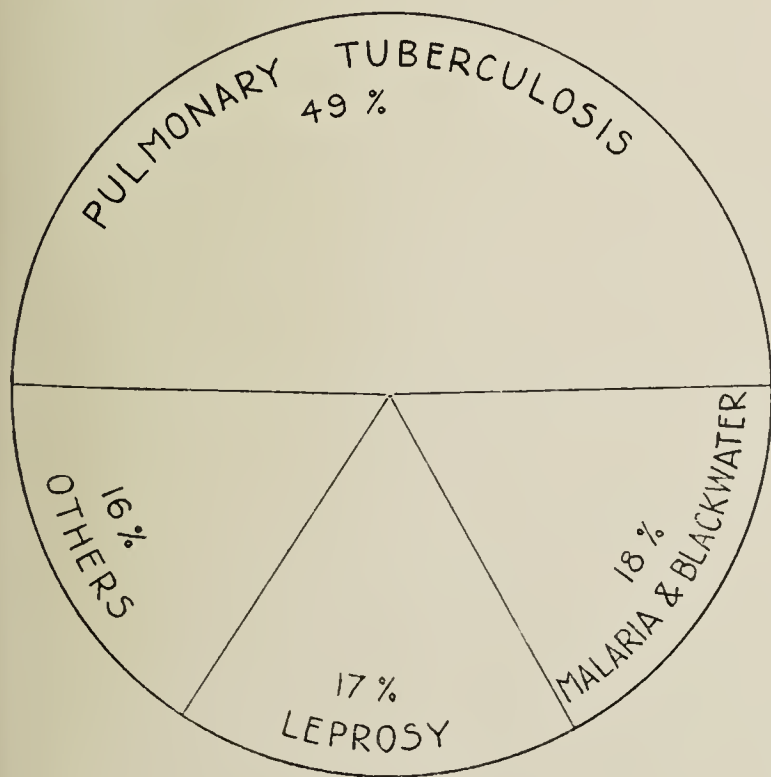


Total incidence 16,638

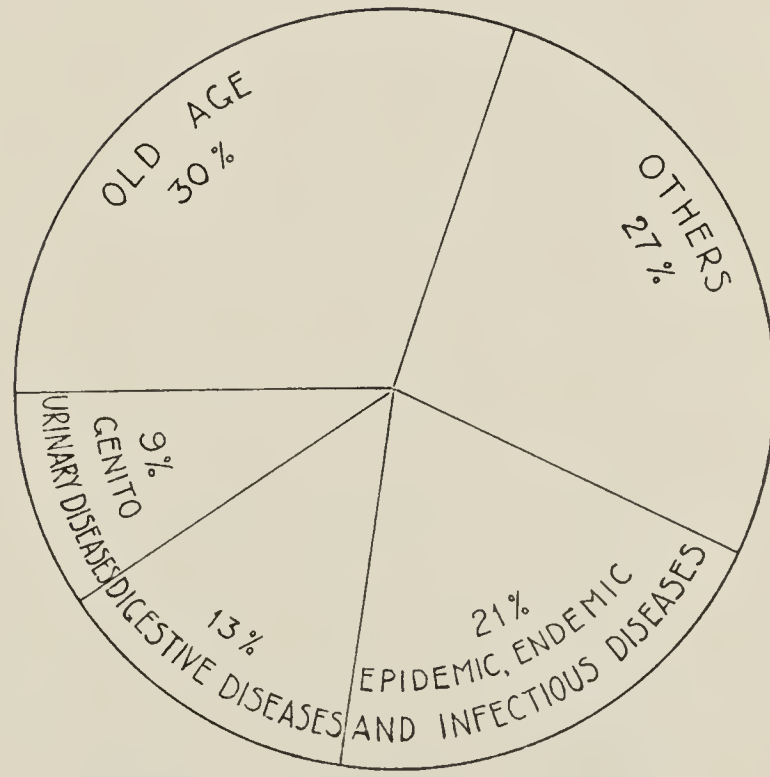
The Proportion of Epidemic, Endemic, Infectious, Systemic and Other Diseases shown as Percentages of Total Cases.



Total incidence 128,235



Total Deaths 99



Total Deaths 470

The number of cases of malaria dealt with in the Zanzibar town hospitals during the last five years has been:—

| 1932 | 1933 | 1934 | 1935 | 1936 |
|-------|-------|-------|-------|-------|
| 3,375 | 3,580 | 4,473 | 2,452 | 1,635 |

The number of cases of malaria seen in Zanzibar town, is diminishing; the possible reasons for this decrease are discussed in Section III.

Blackwater Fever.—17 cases were reported. The 1935 total was 4 and in 1934 was 14.

Filariasis.—The total number of cases shown in Table VI, does not represent the true incidence of the disease as many of the conditions are tabulated as deep muscle abscesses or hydrocele.

Dengue.—One European case occurred in Zanzibar town during the year and the severe pains and other classical symptoms were present. It is difficult to say why only one case occurred except that the patient was in the habit of bathing at a number of remote beaches and it is possible infection was acquired at one of them.

(b) INFECTIOUS DISEASES.

There was no outbreak of any serious infectious disease during the year and the cases dealt with at Government hospitals during the last four years are recorded below:—

| | 1933. | | 1934. | | 1935. | | 1936. | |
|----------------|--------|---------|--------|---------|--------|---------|--------|---------|
| | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. |
| Small-pox | ... | 3 | — | — | — | — | — | — |
| Chicken-pox | ... | 25 | — | — | 68 | — | 29 | — |
| Morbilli | ... | — | — | — | 105 | — | 24 | — |
| Rubeola | ... | — | — | — | 1 | — | 6 | — |
| Whooping cough | ... | 201 | — | — | 81 | — | 173 | — |
| Mumps | ... | 75 | — | — | 27 | — | 76 | — |
| Diphtheria | ... | — | — | — | 5 | 2 | — | — |
| Dysentery | ... | 73 | 5 | — | 48 | 7 | 50 | 4 |
| Enteric Group | ... | 6 | — | — | 21 | 2 | 8 | — |
| Tuberculosis | ... | 244 | 52 | — | 161 | 70 | 208 | 50 |
| Leprosy | ... | 47 | 2 | — | 21 | 8 | 136 | 17 |
| Yaws | ... | 4,935 | — | — | 4,192 | — | 4,689 | — |
| Syphilis | ... | 446 | 2 | — | 716 | — | 1,200 | 3 |
| Soft chancre | ... | 67 | — | — | 49 | — | 47 | — |
| Gonorrhoea | ... | 1,662 | 2 | — | 1,602 | — | 1,566 | — |
| Influenza | ... | 984 | — | — | 793 | — | 558 | — |
| Tetanus | ... | 3 | 1 | — | 6 | 2 | 6 | 2 |

Enteric Group.—Only eight cases were seen at Government hospitals but 30 positive Widal's were reported by the Pathologist. 22 cases were treated by private practitioners.

Whooping Cough.—173 cases were treated in hospitals—mostly at the clinic for women and children. They occurred in every month of the year and no deaths from the disease are recorded.

Ulcers.—22,417 ulcer cases were treated as compared with 13,082 in 1935. Approximately half the cases were reported from Pemba and the District Medical Officer writes:

“There has been a marked recrudescence of the epidemic of ulcers during 1936. The total number of ulcers treated at all Government hospitals and dispensaries reached the figure of 11,211, and this does not take into account the large numbers treated at the Missions. Nearly all of these ulcers are situated on the lower extremities below the knee-joint. Apparently they bear no relation to the state of nutrition of the patient, for many of the sufferers are otherwise strong and healthy individuals. All classes of the community suffer, but the condition appears to be more common amongst shamba workers. The time of exacerbation of the epidemic appeared to coincide with the influx of clove pickers and clove picking from August onwards. It is interesting to note that there was a considerable epidemic of ulcers in the latter part of 1933 and

there was much clove picking then; that year was an exceptionally dry one. The epidemic, or rather the enormous increase of ulcers this year, occurred in a year which was one of the wettest on record. Excellent results were obtained in the treatment of large chronic ulcers with elastoplast''.

Dysentery.—50 cases were seen and five of them were of the amoebic type. The Pathologist comments on the type of bacilli isolated. There were four deaths due to dysentery.

Influenza.—The numbers were rather less than usual in 1936—558, and no deaths were reported.

Syphilis and Yaws.—The numbers of cases of syphilis treated are increasing each year. From 446 in 1934 to 716 in 1935 to 1,200 in 1936. The increase is not at the expense of yaws as 4,689 cases were seen as compared with 4,192 in 1935 and 4,343 in 1934. In Section III the relative incidence of these two diseases is discussed.

Gonorrhœa.—1,566 cases of gonorrhœa and its complications were seen. This number is slightly less than last year and the diminution is suspected to be due to the closer check of the returns submitted by rural dispensers. Almost every adult male has gonorrhœa, or has had it, and the local people attach very little significance to the condition and seldom take the trouble to seek treatment.

Tuberculosis.—Of the 211 cases dealt with 204 were of the pulmonary type. There has been no significant variation in these numbers; the age groups in which the disease appeared most commonly were 20-30 and 30-40.

(c) HELMINTHIC DISEASES.

Ankylostomiasis.—12,608 cases were reported as against 13,665 in 1935. There is no significance in the decrease as there is no doubt that the figures for this disease were inflated in the past since the number of treatments said to have been given bore no relation to the amount of the drugs supplied for treatment.

Schistosomiasis.—550 cases were seen as against 832 in 1935. The disease is wide spread in Pemba and less so in Zanzibar, but it is tolerated to a remarkable extent; people who are infected think nothing of passing bloody urine for years. This toleration of schistosomiasis and ankylostomiasis is characteristic of the Zanzibar natives most of whom live within a few miles of some dispensary or hospital and, in any case, roads are good and public buses frequent and cheap. Increased education and propaganda may, in time, increase the numbers of persons seeking treatment.

(B) VITAL STATISTICS.

I. POPULATION.

The estimated population in the Zanzibar Protectorate at the end of the year 1935 was 242,977. During the year 3,961 live births and 4,092 deaths were registered; there were 13,590 immigrants and 13,858 emigrants so that the estimated population at the end of the year was 242,578 a decrease of 399.

| | Estimated mid year population. | Birth Rate. | Death Rate. |
|------|--------------------------------|-------------|-------------|
| 1931 | 237,000 | 19.7 | 19.5 |
| 1932 | 240,000 | 18.9 | 19.3 |
| 1933 | 244,000 | 18.8 | 15.1 |
| 1934 | 244,000 | 18.3 | 17.6 |
| 1935 | 243,500 | 14.9 | 16.6 |
| 1936 | 242,770 | 16.3 | 16.8 |

Births and Death Rates.—The above figures are compiled from vital statistics forms submitted by the Mudirs through the Provincial Administration.

The following table of births and deaths arranged by districts shows how little reliance can be placed on any of the figures:—

| | Birth Rate | | Death Rate | |
|---------------------------|------------|------|------------|------|
| | 1935 | 1936 | 1935 | 1936 |
| <i>Zanzibar District.</i> | | | | |
| Mkokotoni | ... 24.2 | 34.8 | 18.3 | 17.5 |
| Chaani | ... 13.6 | 20.1 | 21.0 | 16.8 |
| Mangapwani | ... 13.5 | 18.2 | 11.5 | 20.6 |
| Magharib | ... 5.5 | 5.7 | 25.0 | 18.3 |
| Koani | ... 10.9 | 12.2 | 18.3 | 15.8 |
| Chwaka | ... 10.8 | 4.2 | 6.8 | 3.4 |
| Makunduchi | ... 7.5 | 33.0 | 50.0 | 16.0 |
| Zanzibar Town | ... — | 3.7 | 3.2 | 15.9 |
| <i>Pemba District.</i> | | | | |
| Wete | ... 7.6 | 7.8 | 10.3 | 11.5 |
| Matangatwani | ... 10.0 | 12.2 | 6.9 | 7.0 |
| Piki | ... 6.1 | 4.3 | 7.4 | 9.0 |
| Chake Chake | ... 11.9 | 14.7 | 7.7 | 7.3 |
| Kisiwani | ... 12.0 | 17.6 | 6.8 | 10.8 |
| Chonge | ... 15.2 | 9.7 | 4.8 | 9.4 |
| Mkoani | ... 19.4 | 21.2 | 15.0 | 13.4 |
| Jambangome | ... 3.0 | 4.9 | 6.0 | 8.4 |
| Kengeja | ... 9.6 | 8.6 | 10.7 | 11.7 |

It is obvious that the discrepancies in the above table cannot be accounted for except by faulty registration. The books of the Mangapwani mudiria were observed during the year with some care by the Health Office Staff so that the birth rate of 18.2 and the death rate of 20.6 for that area may be approximately correct. It is remarkable how divergent the remainder of the figures are from these rates. The Pemba birth and death rates carry little conviction.

Certain vital surveys were carried out during the year and the population found in five mudirias in Zanzibar is contrasted below with the 1931 census figures.

| | 1931 Census | 1936 | |
|------------|--------------|--------------|-----------------|
| Mangapwani | ... 9,221 | 8,593 | — 628 |
| Makunduchi | 13,616 | 13,162 | — 454 |
| Chwaka | ... 3,373 | 4,450 | + 77 |
| Mkokotoni | ... 20,661 | 19,249 | — 1,412 |
| Chaani | ... 9,017 | 8,328 | — 689 |
| | <hr/> 55,888 | <hr/> 53,782 | Balance — 2,106 |

These figures tend to bear out the suggestion made in 1934, that the population of Zanzibar, if not reinforced periodically by an excess of immigrants over emigrants, may be diminishing. There are, however, three factors which militate against any definite conclusion being drawn from these figures. The accuracy of the 1931 census figures is not above suspicion; an element of uncertainty is introduced when the whole count of an area is made by Sanitary Inspectors over a period of several weeks, because people move about during the count; the fact that there exists a definite drift from rural to urban life may mean that the “missing” people in the mudirias are in Zanzibar Town as there is no way of estimating the town population short of a census count.

In the course of vital surveys an endeavour was made to ascertain actual birth and death rates amongst groups of villagers. The results obtained were inconclusive and the only prospect of obtaining returns that are approximately correct would appear to be the more careful registration of births and deaths by the authorities concerned.

Infantile Mortality Rate.—The rate calculated from the official returns is 90 for all communities, but there is no reason to believe that this rate approximates to the truth.

The rates obtained from investigations carried out in 1935 varied from 190 to 275 per 1,00 live births. One of the same areas, in Zanzibar, was kept under observation during 1936 and the infantile mortality rate was 161.

It seems probable that the true infantile mortality rate is in the neighbourhood of 200 per 1,000 live births. This rate is high, of course, by European standards but may be regarded as more or less normal for African communities living under such conditions as prevail in Zanzibar. The extension of the work of the Health Visitors may bring to light more definite facts as a card index system has been started in respect of all babies seen.

Still Birth Rate.—The registered still births give a rate of 4.2%, that is the percentage of still births to still births plus live births. The surveys quoted in 1935 gave the rate as 14%. Amongst Africans dealt with by the Zanzibar Maternity Association the rate for the year was 8.8%, but the numbers concerned are too small to make this rate of any real value. It is quite certain, however, that the reported rate is below the true rate as still births are not registered by many people.

Maternity Mortality Rate.—The registered figures give a rate of 5.3 per 1,000 live births as compared with 8.6 in 1935. The probability is that even the higher rate is below the actual rate since the rate for England and Wales in 1934 was 4.6.

General.—All the rates quoted above are seen to be open to doubt and it must be confessed that there is no certitude about the trend of the population of Zanzibar and Pemba. Whether future years will see such a degree of accurate registration that reliable figures can be obtained remains to be seen. It has been practicable elsewhere in Africa to obtain relatively accurate statistics relating to births and deaths, and the achievement of the same standard should not be impossible in the Zanzibar Protectorate.

II. EUROPEAN OFFICIALS.

The officials included in Table A and B below are those whose names appear in the Protectorate Staff List only. Wives and families are not included.

TABLE A.

Showing the sick, invaliding and death rates of European officials during the last three years:—

| | 1934 | 1935 | 1936 |
|--|-------|-------|-------|
| Total number of officials resident | 105 | 97 | 102 |
| Average number resident | 68.64 | 69.62 | 69.51 |
| Total number on sick list | 290 | 180 | 151 |
| Total number of days on sick list | 585 | 979 | 981 |
| Average daily number on sick list | 1.6 | 2.68 | 2.68 |
| Percentage of sick to average number resident | 2.33 | 3.85 | 3.85 |
| Average number of days on sick list for each patient | 2.02 | 5.43 | 6.49 |
| Average sick time to each resident | 5.57 | 10.09 | 9.62 |
| Total number invalided | — | — | — |
| Percentage of invalided to total residents | — | — | — |
| Total deaths | — | — | 2 |
| Percentage of deaths to total residents | — | — | 1.96 |
| Percentage of deaths to average number residents | — | — | 2.88 |

The most common diseases were:—

| | |
|------------------------------------|----|
| Malaria | 20 |
| Diseases of the skin | 15 |
| Diseases of the respiratory system | 14 |
| Influenza | 13 |
| Diseases of the digestive system | 12 |
| Local injuries | 12 |
| Debility | 8 |

Medical Boards were held to enquire into the health of four European officials during the year and the following recommendations were made:—

To proceed on sick leave:—

| | |
|----------|---|
| Injury | 3 |
| Pleurisy | 1 |

Deaths.—Two deaths occurred during the year.

| | |
|-----------|---|
| Injury | 1 |
| Pneumonia | 1 |

III. EUROPEAN NON-OFFICIALS.

162 European non-officials reported at Government Hospitals as compared with 213 during the previous year.

Principal causes of sickness :—

| | | |
|------------------------------------|-----|----|
| Diseases of the digestive system | ... | 19 |
| Diseases of the skin | ... | 15 |
| Diseases of the respiratory system | ... | 9 |
| Influenza | ... | 8 |
| Local injuries | ... | 8 |

Deaths.—Nil.

IV. NON-EUROPEAN OFFICIALS.

TABLE B.

Table showing the sick, invaliding and death rates of non-European officials during the last three years :—

| | 1934 | 1935 | 1936 |
|--|--------|-------|--------|
| Total number of officials resident | 421 | 496 | 475 |
| Average number resident | 378.51 | 446.3 | 430.73 |
| Total number on sick list | 562 | 306 | 268 |
| Total number of days on sick list | 2,840 | 2,281 | 2,456 |
| Average daily number on sick list | 7.78 | 6.25 | 6.71 |
| Percentage of sick to average number resident | 2.06 | 1.4 | 1.55 |
| Average number of days on sick list for each patient | 5.05 | 7.45 | 9.16 |
| Average sick time to each resident | 5.31 | 4.6 | 5.17 |
| Total number invalided | 1 | 9 | 5 |
| Percentage of invalided to total resident | .24 | 1.82 | 1.05 |
| Total deaths | 3 | 2 | — |
| Percentage of deaths to total residents | .71 | .4 | — |
| Percentage of deaths to average number residents | .79 | .45 | — |

The most common diseases were :—

| | | |
|--------------------------------------|-----|----|
| Malaria | ... | 99 |
| Influenza | ... | 50 |
| Diseases of the respiratory system | ... | 27 |
| Diseases of the skin | ... | 27 |
| Diseases of the digestive system | ... | 24 |
| Disease of the genito-urinary system | ... | 9 |

Medical Boards were held on 12 Asiatic Officials of whom five were permanently invalided for the following causes :—

| | | |
|---------------------|-----|---|
| Ankylostomiasis | ... | 1 |
| Chronic Asthma | ... | 1 |
| Mental instability | ... | 1 |
| Chronic prostatitis | ... | 1 |
| General debility | ... | 1 |

Deaths.—Nil.

SECTION III.

HYGIENE AND SANITATION.

A. GENERAL REVIEW OF WORK DONE AND PROGRESS MADE.

I. PREVENTIVE MEASURES.

(a) MOSQUITO OR INSECT-BORNE DISEASES.

Malaria.—In view of the large proportion of the population of the Zanzibar Protectorate who live in towns, some 20%, it is necessary to consider malaria from two aspects, the incidence of the disease and the protective measures developed in towns and in the country.

MALARIA IN ZANZIBAR TOWN.

Incidence.—The incidence of the disease has decreased to a considerable extent as may be seen from the following table which includes all cases of malaria treated at Government institutions during the past three years:—

| | | | | |
|------------------|-----|-------|-------|-------|
| | | 1934 | 1935 | 1936 |
| Cases of malaria | ... | 4,473 | 2,452 | 1,625 |

The Pathologist reports that parasites were seen in the following proportions.

| | | | |
|---------------|-----|-----------|-----|
| P. falciparum | 40% | P. vivax | 26% |
| P. malariae | 2% | Undefined | 32% |

The infecting mosquitoes were *A. costalis* and *A. funestus*. Cases occurred with remarkable regularity throughout the year as shown in the following table.

| | | | |
|----------|-----|-----------|-----|
| January | 138 | July | 180 |
| February | 115 | August | 175 |
| March | 137 | September | 118 |
| April | 84 | October | 163 |
| May | 101 | November | 129 |
| June | 148 | December | 137 |

The rainfall figures for the past four years give the impression that rains are usually heaviest in April, May, June, November and December. So that it might be expected that the malaria figures would rise markedly just after these months. To some extent this has been the case although it is considered that the preventive measures in force may have nullified the effect of the rains on mosquito breeding in towns.

RAINFALL FOR ZANZIBAR TOWN.

| | | | | | |
|-----------|-----|--------|--------|--------|--------|
| | | 1933 | 1934 | 1935 | 1936 |
| | | Inches | Inches | Inches | Inches |
| January | ... | 5.07 | 3.61 | 0.40 | 5.75 |
| February | ... | 3.25 | 0.25 | 5.86 | 10.70 |
| March | ... | 2.63 | 5.24 | 7.19 | 3.25 |
| April | ... | 7.64 | 11.46 | 18.37 | 19.88 |
| May | ... | 4.51 | 22.04 | 29.77 | 11.51 |
| June | ... | 0.46 | 9.31 | 9.38 | 8.22 |
| July | ... | 0.97 | 3.63 | 0.16 | 0.00 |
| August | ... | 2.39 | 1.32 | 6.04 | 1.78 |
| September | ... | 0.57 | 0.52 | 7.73 | 2.79 |
| October | ... | 3.37 | 2.72 | 4.99 | 0.73 |
| November | ... | 10.19 | 1.86 | 15.72 | 5.76 |
| December | ... | 6.49 | 15.87 | 6.28 | 6.78 |

The suggestion that the rainfall affects the incidence of malaria in Zanzibar town to a slight extent only is borne out by the fact that about 80% of the cases of "town" malaria occurred amongst people who live around the periphery of the town; that is on, or near, the town boundary outside which very little anti-malarial work was carried out because the staff to do it could not be provided.

Ten cases occurred amongst an average of 60 European officials resident in Zanzibar town; in five instances infection took place in Pemba; three cases followed visits to the country at night; one occurred in an official who had just returned from leave in Kenya and the final case is thought to have been a relapse. The European community lives near the apex of a peninsular which forms a sector of which the town boundary is the arc and it is therefore more sheltered from anopheline attack than any other community.

Fifty-five cases of malaria occurred amongst an average non-European resident staff of 385. In 36 cases the officials concerned had visited the mainland, or Pemba, or spent evenings in the country shortly before they became ill. In 19 cases there was no evidence that the disease was contracted elsewhere than in Zanzibar although some of the cases may have been relapses. The Asiatic officials live in much the same areas as the Europeans, but at night many of them attend clubs situated near the town boundary where infection is most likely to be acquired.

Preventive Measures.—Anti-malarial measures in Zanzibar have now become a matter of steady routine and, as more funds and staff become available, control will be pushed outside the town boundary and will include the various swamps and streams which now breed anopheline mosquitoes. It is hoped to extend the work in this way during 1937.

Mosquito breeding is prevented by the weekly inspection of every house in the town area, nearly 11,000, by mosquito searchers under the control of the various district Sanitary Inspectors. The larvæ which they find are almost invariably those of culicine or stegomyia mosquitoes.

In addition to the mosquito searchers, gangs look for and deal with all collections of casual water within the town boundary by filling, oiling or spraying paris green. This work is difficult as Zanzibar is so low lying that water stands about and does not drain away readily.

Along the town boundary, and just outside it, other details attended to are the grading of streams, the filling in of old wells, the digging of temporary drains, cleaning existing anti-malarial drains and maintaining earth drains.

A small amount of permanent anti-malarial drainage was carried out during the year in a swampy valley just outside the town, and it is to be extended next year.

As a check on the work done eleven control huts are kept under observation and searched daily for adult mosquitoes. Anopheline mosquitoes were caught on only 20 occasions mostly in the huts near the town boundary, and only once in the centre of the town. This compares with 1,684 culicine and 1,875 stegomyia adults captured. Most of the large number of culicines were captured during the rainy seasons when the ground is water logged and sullage pits and pit latrines fill up and breed culicines in large numbers.

The malaria position in Zanzibar town is satisfactory in view of the conditions which exist and it is unlikely that any great improvements will be effected until the following desiderata have been fulfilled; all are receiving consideration as finance and circumstances permit.

(a) The pipe borne water supply should be extended so that people in the native areas and on the boundary have water available close at hand and do not have to store water or use wells.

(b) Cattle should be removed from the town as anopheline larvæ are found in their hoof prints. This is to be done in 1937.

(c) Anti-malarial control requires to be extended for a mile outside the town boundary to protect effectually the towns people living along the boundary. It is expected that part, at least, of this proposal will be approved and funds made available in 1937.

(d) A town planning scheme is required for the native areas of the town so that roads, drains and covered sewers can be provided. If this were done anopheline breeding places would be reduced to a minimum and the abolition of all pits, now maintained for sullage water and in connexion with pit latrines, would remove most of the culicine breeding places.

Pemba Townships.—In each township anti-malarial work is carried out systematically on the same lines as in Zanzibar. But there are additional difficulties in Pemba in that ravines and swamps encircle each township and seepages are common and require to be dealt with by sub-soil drainage, agricultural drains, contour drains, and permanent main drains. Reclamation of swampy land by filling is carried out where practicable; eucalyptus trees were planted but they do not thrive.

Notwithstanding the anti-malarial measures undertaken malaria is common in townships as, amongst a resident European staff of nine, ten cases of malaria occurred and 44 cases amongst an average non-European staff of 45. In addition the reports received on the health of both European and Asiatic officials indicate that the general level of health is not so good as in Zanzibar Town. It is true that some of the malaria contracted by European officials may have been the result of camping in the district, but the impression remains that none of the stations are protected adequately against malaria and, in consequence, it is expected that in 1937 all official quarters will be protected against mosquitoes by wire gauze.

Rural Malaria.—This differs only in detail from the situation which exists all over Central Africa. A scattered population lives near swampy rice valleys, rivers and ponds all of which breed anopheline mosquitoes during most of the year. The result is all children are infected soon after birth and children up to the age of 5 or 6 have enlarged spleens and parasites can be demonstrated in their peripheral blood. As immunity, or tolerance, develops the spleen rate falls and in school children it varies from 39% to 64%, dependent on the proportion of young children in each school. In adult life the spleen rate is only 16%. There is no doubt that malaria is responsible for a large proportion of the infantile mortality but it is equally difficult to see what can be done to prevent it.

Furthermore malaria, in conjunction with the two chief debilitating conditions which prevail—malnutrition and ankylostomiasis—is responsible for an unknown but large amount of illness amongst adults.

The preventive measures adopted in the country are, so far, not very effective and there is no suggestion that in Zanzibar, anymore than elsewhere, any practical solution of the problem of rural malaria is in sight. Quinine can be obtained free from all dispensaries and people are urged to attend and to bring their children for treatment. Quinine is also on sale at a cheap rate at Mudir's Offices, Schools, Post Offices, etc.

The advantage of using mosquito nets is demonstrated at Health Exhibitions and by rural dispensers and, as a result, the use of nets is increasing. The importance of dealing with breeding reservoirs near houses is pointed out to individuals but, so far, not one single person is known to have bestirred himself to carry out any recommendation for eliminating nearby breeding places. Similarly advice to site huts away from swamps falls on deaf ears as it means more trouble and extra work. Possibly the only real hope of any results lies in the 'bonification' of the people; that is to say if more and better food could be made available for every one health conditions would improve automatically—this question is now engaging the attention of a special committee on nutrition.

If the incidence of ankylostomiasis could be reduced to a low level it is probable malaria would be better tolerated and cause less disability.

The investigations, mentioned in last year's report, into the general malaria problems of the country were continued during the year. Dr. D. D. McCarthy has now been seconded to this work for two years and his expenses and salary are paid by the Colonial Development Fund. This year he was assisted by an European laboratory assistant (a sergeant in the R.A.M.C.) seconded to Zanzibar by the War Office. It is expected these investigations will terminate during 1937 and a report will be presented which will be considered in next year's annual report.

Dengue.—Only one case was reported and it is discussed in Section II (a). Other cases may have occurred and were not recognized but there is no suggestion of any epidemic spread of the disease.

Yellow Fever.—During the year the Director of Medical Services attended a conference held at Johannesburg to consider the question of the possible spread of yellow fever in Africa by air and certain proposals were put forward for preventive action on the part of all the countries threatened by invasion. By reason of its situation Zanzibar is the least threatened of all East African dependencies but such preventive measures as are necessary will be enforced and a mosquito survey of the area about the aerodrome is being carried out and the results will be available next year.

Filariasis.—Many cases of illness in the form of diseases of the lymphatic system, hydrocele and deep abscess were due to filarial infection. In this connexion the following table is printed of the numbers of times when mosquito larvæ were discovered in Zanzibar town and of their type.

LARVÆ FOUND IN ZANZIBAR TOWN.

| | 1932 | 1933 | 1934 | 1935 | 1936 |
|-------------------|-------|-------|-------|-------|-------|
| <i>Stegomyia</i> | 3,298 | 2,388 | 2,793 | 2,637 | 3,368 |
| <i>Culex</i> | 873 | 544 | 601 | 382 | 228 |
| <i>Anopheline</i> | 179 | 38 | 164 | 107 | 32 |

(b) EPIDEMIC DISEASES.

Plague and Cholera.—In the past these two diseases have loomed large in the history of Zanzibar but have not re-appeared in recent years. In the absence of a town plan whereby rat attracting trades could be zoned and controlled, and as no rat proofing exists anywhere, it is merely a matter of good fortune that plague does not obtain a footing in Zanzibar. There is no doubt it would be a serious matter if it arrived as rats are plentiful and are well provided with *X. cheopis* and *X. brasiliensis*. It is true that very strict precautions are adopted to prevent the export of plague from India and from the mainland coast, but with the large dhow traffic that exists it is probable that one day infected rats will arrive by dhow as a result of an unauthorized stay in a plague infected port.

No rat proofing regulations exist but the matter has been raised by the Medical Officer of Health. Rats are trapped regularly and examined for traces of plague.

The following table gives the numbers.

| Zanzibar Town. | Chake. | Wete. | Mkoani. |
|----------------|--------|-------|---------|
| 11,254 | 3,856 | 3,651 | 2,870 |

915 spleen smears were examined in the laboratory; when the first positive smear is seen it will be too late to do very much to prevent an outbreak.

Rats are a rarity in huts in rural areas, this is due to the frail type of construction and the fact that it is not usual to store food attractive to rats in huts.

It is probable cholera would not make much headway if introduced now, but in the past it has caused many deaths in the town of Zanzibar and in the rural areas.

Small-pox.—The number of vaccinations performed during the year is shown in the following table.

| | 1934 | 1935 | 1936 |
|--|--------|--------|--------|
| Total vaccinations in Zanzibar and Pemba | 10,283 | 12,063 | 15,230 |

The increase was due to the fact that a small-pox outbreak occurred in Tanganyika Territory on the coast and in consequence vaccination was speeded up in Zanzibar. District Sanitary Inspectors with a special staff were employed on vaccination work in the rural areas and in the towns. Considerable opposition was met with in some districts, but this is to be expected and is gradually diminishing. In response to popular agitation a female was employed as a vaccinator for some months in Zanzibar Town, but it was proved that in practice most Mohammedan women were vaccinated by their own doctors and little use was made of her; she was transferred to the women's clinic towards the end of the year.

All immigrants and emigrants were vaccinated when scars of recent vaccinations could not be shown.

Enteric.—A few more cases of this disease were notified than in past years—but there has been no unusual spread of infection. The larger figures are most probably the direct result of the prosecution of a private practitioner for failure to notify an infectious disease.

Several carriers were traced by the Pathologist and dealt with, but sporadic cases due to carriers crop up from time to time and usually do not spread, except amongst the family where the disease originates. More rapid notification would cut down the numbers.

With the makeshift system of drains and sewers which exists in Zanzibar town and the entire absence of any plant for pasteurizing milk, or even for scalding milk cans, it must be admitted that luck has a good deal to do with the comparative freedom of the town from enteric.

Dysentery.—Five cases of amoebic dysentery—it is believed all were imported—were notified and 26 cases of bacillary dysentery. All came from the town and there is no record from country dispensaries of either disease. Dysentery must occur in the country but it must be of a mild type—the town bacillary type is very mild—as any considerable number of deaths from the diseases would have drawn attention to its existence.

Measures taken to avoid the spread of dysentery consist in the enforcement of minimum hygienic standards; the discouragement of the discharge of crude sewage on to the beaches and into the creek and the encouragement of the digging of pit latrines in country areas. The water carriers who convey water in tins from public stand pipes to houses are a potential menace because of their insanitary habits. No carriers of enteric or dysentery, however, were found amongst them. Milk hawkers, too, are a danger but control is becoming more effective.

Tuberculosis.—In Zanzibar tuberculosis usually implies pulmonary infection as tuberculous infection of bones, joints and vertebræ is uncommon: in 1936, 204 cases of pulmonary tuberculosis were dealt with.

Tuberculosis depends largely on poor housing for its dissemination and conditions are ideal for its spread in many parts of the town, particularly in certain bazaar areas occupied by Indians who, in addition, are often very poor people and ill fed.

As the numbers of cases of tuberculosis are so small each case can be dealt with individually. On notification by a doctor the Sanitary Inspector of the area visits the patient and reports on his home conditions and on the number of contacts who are then examined by a Medical Officer. When possible, infected Indians are persuaded to return to India and as a rule, if they have the money, they do so as it is widely recognized that tuberculosis cases do not recover in Zanzibar. Alternatively a few Indian cases go to a sanatorium in Tanganyika Territory.

Tuberculosis cases of local domicile can often be persuaded to live a more healthy life in the country, provided they have relatives to look after them and build them a suitable shelter. The alternative is removal to the Walezo Tuberculosis colony which is described in Section VII. As a therapeutic institute, this is not a success as only helpless people stay in it, not because it is unattractive in itself, but because it is so much patronized by people on the point of death that even the name Walezo has a sinister significance for most Africans.

Tuberculosis is not a very serious problem in Zanzibar confined as it is almost entirely to towns. There is no doubt it would disappear entirely with the abolition of the slum areas. This is unlikely to happen and it seems probable that tuberculosis will continue to afflict town dwellers for an indefinite period since the potential victims care nothing for light and ventilation and cannot afford good food. Moreover property owners do not appear to care in any way for the welfare of their tenants as is shown by their extreme reluctance to carry out housing improvements suggested by the Medical Officer of Health. Even proposals to bring “houses let in lodgings” up to the minimum legal standards have to be enforced by law as a rule.

Leprosy—This disease has been discussed in connexion with the two leper colonies described in Section VII, and it remains only to state that, with the abolition of the Leper Decree in 1936, all suggestion of compulsion has been removed from the relations between the leper and his medical attendant. With this removal of restrictions has been combined the development of the two leper colonies so that they really do attract lepers. In consequence, here, as elsewhere, the leper “problem” has ceased to be a problem. The disease is not common, only 79 new cases having been dealt with in the past three years. It is recognized readily by the natives in its earliest stages and these early cases come to hospital voluntarily and ask to be allowed go to the colonies. It is probable that in time leprosy will disappear from these Islands and there is no doubt that the present policy, attractive colonies, fair treatment of individuals and no compulsion is the best that can be adopted. As a routine all contacts of lepers are examined when a new leper is discovered and thereafter as circumstances permit.

Venereal Diseases.—The numbers of those treated during the past three years were:—

| | 1934 | 1935 | 1936 |
|-------------------------------------|-------|-------|-------|
| Syphilis all varieties ... | 446 | 716 | 1,200 |
| Gonorrhœa and its complications ... | 1,698 | 1,806 | 1,566 |
| Yaws ... | 4,343 | 4,192 | 4,689 |

The increase in the number of cases of syphilis has not been at the expense of the number of cases of yaws reported.

The comparative incidence of yaws and syphilis in Zanzibar is of interest. Amongst 701 school children, on whom the Kahn test was carried out this year, 12.1% of the Africans and 7.6% of the Arabs gave a positive result, this may have been due to yaws or to inherited syphilis. Contrasted with this is the fact that amongst 77 adult African recruits for the Zanzibar Police the percentage of positive Kahn’s was 24%; of 58 adult Africans, selected at random from those who lived near to the various schools investigated, the positive Kahn percentage was 59%. Also, as nearly all authorities agree, iritis and allied eye conditions are not regarded as complications of yaws yet these diseases, which are usually associated with syphilis, are common and were found in nearly 12% of cases dealt with in the Zanzibar eye clinic. Of a series of 223 persons taken at random who attended hospital there were 33 doubtful positive results and 55 positive giving a positive percentage of 24% if the doubtful results are disregarded.

It is unusual for yaws, with “typical” lesions to occur amongst adults and all medical officers are agreed that such cases are very rarely seen.

These facts appear to indicate that syphilis is more prevalent in the country than was supposed.

Gonorrhœa.—It is said most male Swahilis have gonorrhœa, and the evidence available does not conflict seriously with this generalization. Thus of 140 applicants for enlistment in the Police 128 had an active discharge or produced gonococci after prostatic massage. Of new prisoners admitted 80% had active or latent gonorrhœa. The “new cases” dealt with each year are not rapidly increasing as gonorrhœa is so lightly regarded that, normally, people do not attend for treatment unless it is an unusually severe attack.

A certain amount of propaganda is being undertaken to reduce the increase of venereal diseases and at the three public health exhibitions held during the year advice was given about syphilis and gonorrhœa and 2,000 pamphlets were issued on the prevention and cure of the disease.

The Lady Medical Officer and her staff engage in ante-natal work and are developing what amounts to a health visiting service; in all her activities and those of her staff the importance of venereal diseases is stressed.

Dispensers in country districts were provided with pamphlets on venereal diseases and are instructed how to explain them to their patients—some do so with good results. The following table, showing the amount of arsenicals and bismuth preparations used during the last three years indicates that more work

is being done with regard to treatment of syphilis—gonorrhœa is largely untreated.

| | 1934 | 1935 | 1936 |
|--|-------|-------|-------|
| Grammes of N.A.B. and other arsenicals used ... | 429 | 1,131 | 2,638 |
| Grammes of Bismuth intramuscular preparations used | 2,912 | 2,670 | 3,264 |

Other Epidemic Diseases.—Negligible numbers of cases of chickenpox, and measles occurred and the usual precautions were adopted to stop their spread. Contacts were isolated, children were kept from school, houses were disinfected, etc.

(c) HELMINTHIC DISEASES.

There are only two of importance in Zanzibar and Pemba—ankylostomiasis and schistosomiasis.

Ankylostomiasis.—Twenty years ago the annual total number of cases of ankylostomiasis seen in Government hospitals was 90, and in 1936 the number was 12,608.

Ankylostomiasis is universal in both islands and is regarded by all Medical Officers as the chief cause of disability of all varieties—that is when malnutrition exists the presence of ankylostomiasis makes the condition worse and similarly with all other diseases.

As detailed in section V.B. fairly vigorous methods were adopted to bring home to the people the dangers of ankylostomiasis and how it can be avoided.

In addition dispensers and rural district sanitary inspectors insisted on people providing themselves with latrines whenever it was practicable to do so. But here the lethargy and indifference of the people prevented anything very much being achieved. Further experiments were made with Iwan borers as advocated by the experts in Malaya, possibly the local technique was at fault but the borers, save as demonstration models in skilled hands, proved useless and efforts to emulate the Malayan workers' hoisting gear improvised from bamboos and wire proved unsuccessful. It became necessary, therefore, to devise a new type of tripod and winding gear which would work and could be used by anyone. This work is now in hand and it is hoped that in 1937 several borers will be put into use—but it is obvious that people must help themselves as it is impracticable for Government to dig latrines for 242,000 people. It is possible only to set the example and try and persuade people to follow it. More intensive rural sanitary work will be undertaken in 1937.

Schistosomiasis.—This disease appears to exist all over both Islands—especially Pemba—in small pockets. The local infections are all associated with what must be presumed to be infected water supplies although there is no evidence that any of them are infected except that people living near them acquire bilharzia.

Some attempts were made during the year to improve water supplies but the response has been poor. Any Zanzibar native appears willing to drink any type of polluted water rather than take the trouble to dig a well. Absence of tribal organization and a community sense renders the problem more difficult as there appears to be no code of behaviour observed in connexion with water supplies such as many of the most primitive people elsewhere have evolved.

It is expected that in 1937 a research worker will visit Zanzibar and advise on the schistosomiasis, problem, which is exceptionally difficult as the infected ponds and rice fields do not dry up.

Some little treatment has been carried out particularly amongst the school children—with fuadin, antimony and emetine—but no very good results have been achieved as all these courses of treatment are tedious and often painful and children will not attend regularly.

II. GENERAL MEASURES OF SANITATION.

(a) *Zanzibar Town—“Stone Town” West of the Creek.*—In this area are some 3,000 houses, mostly Arab built of coral and cement; the bazaar area is included and the residential quarters for Europeans, Indians and Goans. Houses let in lodgings (Indian chawls), eating houses, hotels and business premises of all sorts are scattered through the town.

Most of the better class houses are provided with water flush closets and septic tanks whose effluent discharges direct into closed public drains (actually small sewers) and thence into the sea; sullage water is discharged direct into the same drains. During the year 800 yards of closed public drains were laid. As soon as public drains are laid house owners within 50 ft. of the line are compelled to connect up. In this way cess pits and sullage pits are being abolished gradually, but it is necessarily slow as funds are limited and the eccentric lay out of the town necessitates the laying of more drains than would be required if the town had been built in an orderly way. The policy is accepted, however, that where possible sullage pits and cess pits are to be abolished, septic tanks installed and the effluent discharged into the sea. Crude sewage is still discharged on to the foreshore in many places but the practice is being discouraged gradually.

Poor class houses are provided with cess pits, usually under the foundations, into which fæces and urine proceed direct via Arab type masonry shafts—sometimes 80 ft. in length and running in the thickness of the wall—or else through iron pipes. As explained, in 1934, the system is primitive and odoriferous, but it has the advantage that it works and it is the rule for cess pits to act as septic tanks and not to overflow because the effluent percolates away through the coral; if they do fill up they are emptied by pump or by hand.

The bucket system of conservancy is dying out. Where it exists the bucket contents and sullage water are discharged at appointed places into the sea. The practice causes a nuisance and is very strongly discouraged.

A few houses have no latrines or any arrangement for the disposal of sullage water and depend on public latrines or their neighbour's hospitality. These houses are being dealt with as circumstances permit, but they are so often owned by poverty stricken people that it is difficult to get improvements effected.

Although in the vast majority of houses some type of latrine is provided, yet there is an almost universal lack of any provision for servants or business employees. Even the houses and flats owned or leased by Government are usually without any sanitary accommodation for servants who either use the beach or public latrines. The increased provision of public latrines is now easing a situation which should not have been allowed to arise in Government controlled properties such as, for example, in the Health Office yard where 300 or more sweepers and scavengers congregate twice daily and until 1936 no latrines, wash places or shower baths were provided for their use. Attention is being paid to these defects all over the town and instructions have been received that all Government controlled properties are to be inspected by the Health Office staff in 1937 with a view to bringing to light anomalies such as are mentioned above.

During the year one fruitful cause of complaint was dealt with. In the past when cess pits had to be emptied they were generally baled out by hand and the contents removed during the day in open barrels on an open cart. A rule has now been made under the Public Health Decree and cess pits and sullage pit emptying is now an offensive trade and can be controlled. The Public Works Department now have a cess pit emptier which can be hired by the public at a small charge but it cannot enter all the narrow streets.

(b) *Zanzibar Town—Native Area East of the Creek.*—Here about 8,000 huts and houses are concerned and save for a few with shafts and basement cess pits the usual system is for every house owner to have a pit latrine and sullage pit in his yard. These latrines smell and fly larvæ by the million are to be seen in them but for some, as yet unexplained, reason these larvæ do not hatch out as may be gathered from the fact that flies are more of a rarity in

Zanzibar than in London. The sullage pits breed culicine mosquitoes if they are neglected, but they are all inspected each week and oiled if necessary.

Until a town plan is drawn up and a water borne sewage system is installed pit latrines and sullage pits must remain with us. There is no alternative within the reach of owners of the huts who could not afford septic tanks and if they could they would not fit them as, owing to the prevailing system of monthly plot tenure, nobody would sink £30 or more in ground he might be compelled to leave at any time. Attention is directed therefore to persuading owners to improve existing conditions by sitting pit latrines outside their huts and not in their kitchen and to providing adequate cement covers for sullage pits and stoppers for the holes in latrine tops. Steady pressure on these lines is achieving results—slowly. Numbers of the more offensive type of latrine, where fæces and urine are discharged on to the shores of the creek running through the town, have been abolished—including two Public Works Department built public latrines where septic tanks have been built.

(c) *Pemba Townships*.—Only two septic tanks exist in Pemba; cess pits are used in the stone houses and pit latrines in huts. A few bucket latrines still exist but are being abolished. There seems to be no immediate hope of any great improvement in these small townships as water is not generally available and sewers do not exist. The District Medical Officer is engaged in enforcing the observance of what standards are practicable and his policy is modelled on that laid down for Zanzibar. Each year conditions improve slightly and steady and unremitting pressure is being brought to bear on owners of unsatisfactory latrines and cess pits.

(d) *Rural Area—Zanzibar and Pemba*.—Figures obtained in a rural sanitary survey of Zanzibar reflect accurately the position in both islands; amongst 22,039 huts and houses only 2,986 latrines were found. That is approximately one house in seven had a latrine the survey took in one area, Mangapwani, to which a good deal of attention has been given and as a result it was found that amongst 3,768 huts there were 861 latrines or about one to every four huts. Amongst the remainder in untouched districts the proportion was just over one latrine to nine huts.

The general practice in rural areas is to use the bush as a latrine and the prevalence of ankylostomiasis, ascariasis and bilharziasis shows what could be avoided if latrines were used universally.

To cope with the situation district sanitary inspectors spent many days preaching the necessity of providing each house with a latrine, and in the public health exhibitions held in Pemba and Zanzibar stress was laid on how to dig latrines and the evil consequences resulting from not using them.

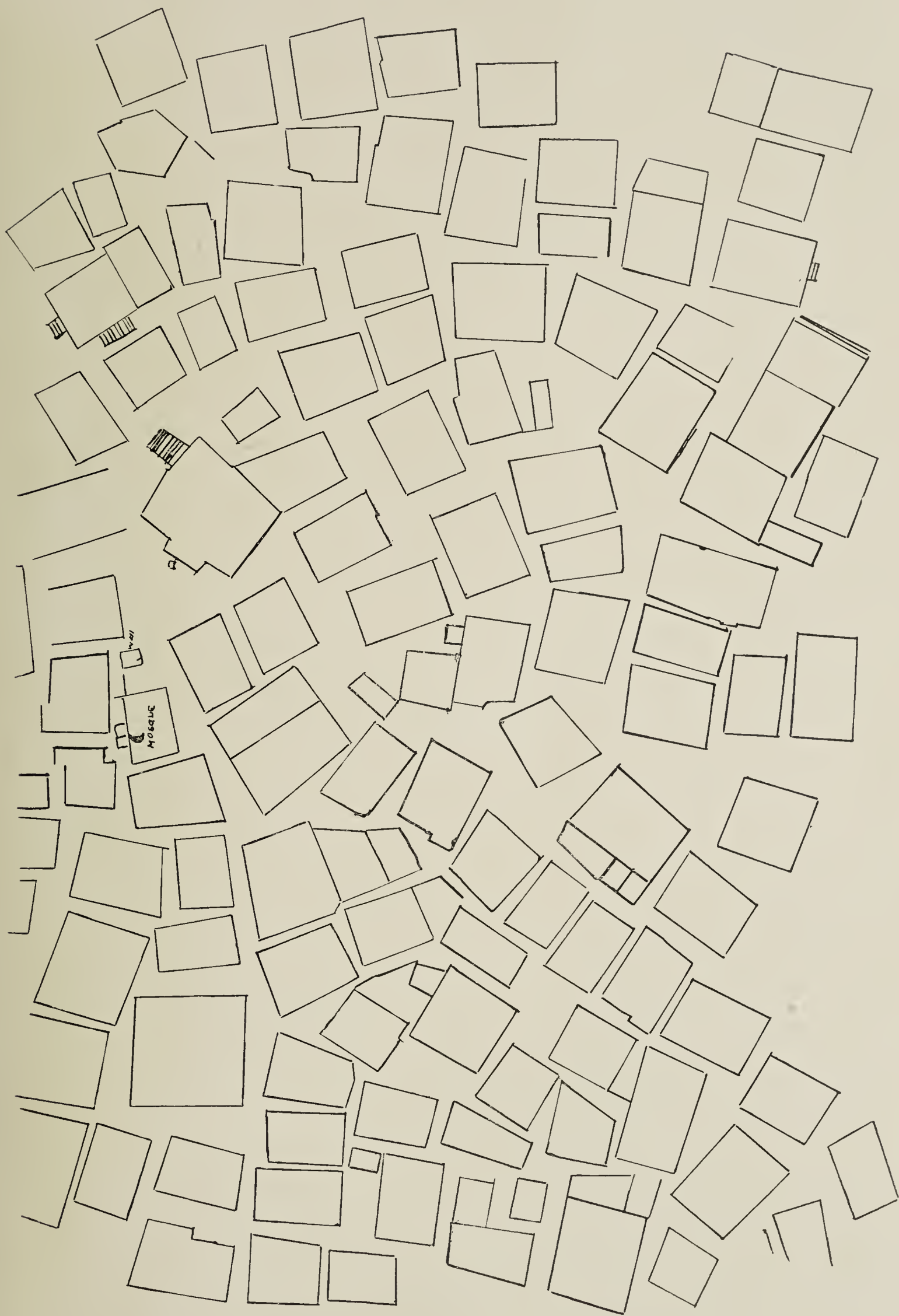
In addition three Iwan earth borers were bought and used in the districts. As yet a design has not been perfected which will allow them to be used by unskilled people. This problem of design is being dealt with by the Public Works Department, and it is expected in 1937 to have a number of earth augers in use throughout the islands for digging latrines, as the sandy soil of the Protectorate is ill adapted to the excavation of the large cavern like pit latrines used in clay soil districts of the mainland.

An attempt was made to provide inexpensive latrine tops for sale to the public in Zanzibar and at every dispensary. Very efficient cement tops were displayed for sale at Shs. 2-75 each. This is cheap but still too dear for the poorer farming people and enquiries were made, through the courtesy of the Royal Sanitary Institute, of many metal manufacturers in England to find out if light non-corrosive metal latrine tops could be produced cheaply. Of 32 quotations received not one could compete with the price of the local article.

SCAVENGING.

(a) *In Zanzibar Town*.—The Medical Officer of Health is in charge of scavenging and about 300 porters and headmen are employed to sweep $56\frac{1}{4}$ miles of streets and lanes and to collect and remove household and trade refuse. A

DRAWING OF A SECTION OF THE NG'AMBO AREA
IN ZANZIBAR TOWN.



To illustrate town planning difficulties where huts, houses, shops and mosques have been erected without any plan.

Scale :—1" in 40'

total of approximately 40,000 tons of refuse and street sweepings was dealt with during the year. The streets are hand swept twice daily with native brooms where macadamized roads exist (mostly in the stone town), and in the native area the sandy lanes are raked daily. A glance at the print of a section of the native town shows why it is necessary to resort to hand sweeping.

(b) *Pemba Townships*.—The District Medical Officer in Pemba is responsible for street cleaning and scavenging and it is carried out in the same way as in Zanzibar.

(c) *Rural Areas*.—There is no scavenging undertaken except in certain small villages—not townships—where Government maintains a Police station, dispensary and school and the District Commissioner is responsible for the work.

(d) *General*.—On the whole scavenging is carried out efficiently, especially as no separate supervisory staff is employed. Gangs of men are allotted to town districts; so many men and carts and brooms to each section, under the control of headmen. The town District Sanitary Inspectors are responsible for the scavenging in their districts, but they have many other duties to perform and can spare little time for direct supervision.

REFUSE REMOVAL AND DISPOSAL.

Householders in all townships are expected to provide themselves with refuse bins, but when possible any receptacle is used instead of a proper covered bin. Covered galvanized bins are being introduced slowly—the difficulty again being that the cost is too much for the poorer people and it is difficult to insist on them being provided.

Disposal of refuse in townships is controlled by the Medical Officer of Health, Zanzibar and the District Medical Officer, Pemba. Refuse is collected in Zanzibar twice a day from part of the town and once daily from the more inaccessible places. The same system is followed in Pemba. Narrow two wheeled carts, carrying about 650 lbs. each, are propelled by three men who sweep the streets, collect refuse and empty their carts at the tip. It is not practicable to use motor lorries to remove refuse either from the streets—which they can rarely enter—or from a central dump to the tips. The haul is too short and the cost would be prohibitive. In 1936, a certain number of small rubber tyred metal refuse carts were introduced and proved of great value in certain areas. Their utility is restricted by their size, so six sets of pneumatic wheels were purchased to fit on existing carts as an experiment. If successful it is intended to make light metal cart bodies locally and to mount them on the pneumatic tyres. If the new carts prove less cumbersome to push than the present wooden tyred machines a reduction in staff costs may be possible.

Rubbish in Zanzibar is usually disposed of by controlled tipping and in 1936 an extensive quarry, some 300 yards in diameter, was almost filled to a level sufficiently high to cover all ground water. At the same time filling in of low lying areas near the sea was carried out with most satisfactory results. In the centre of the town low lying areas, where water used to stand in ponds, were gradually filled in with refuse which was covered with earth. No nuisance resulted from flies or smell. The same system was followed in Pemba save that, in Wete, some of the refuse is incinerated; in Zanzibar only refuse of animal origin is incinerated.

Provision has been made in the 1937 estimates for the purchase of municipal refuse bins which are to be bolted to walls and electric light standards. If their use can be insisted upon the constant littering of streets with fruit and vegetable refuse will cease and the townships will be more pleasant places in which to live. It is the present habit of many of the bazaar dwellers to throw refuse into the streets when they can do so without fear of detection; a number of prosecutions for this offence took place during the year.

It is of interest that during the year the system of refuse collection, street cleaning and refuse disposal in Zanzibar town, a town of 47,000 inhabitants, was inspected by the Secretary of the Royal Sanitary Institute who was pleased

with the way in which the work was done and he considered that in view of the difficulties encountered the cost was reasonable and below what similar services would cost in England where it is usual for refuse to be removed only once or twice weekly.

Drainage.—In Zanzibar town 300 yards of new open drains were built during the year. The Health Office keeps these drains clean and in addition undertakes the care of two miles of a river bed.

In Pemba townships nearly 9,000 yards of permanent drains were kept clean by the District Medical Officer's staff and a number of small earth and contour drains are dug and kept open. Sub-soil drainage by green bamboo pipes is a feature of Chake Chake and has done much to diminish seepages and mosquito breeding in the town.

In rural areas no drainage work is attempted by Government Sanitary Inspectors. Rural dispensers point out the dangers if sullage water and rain water being allowed to accumulate near dwellings but it is difficult to achieve much improvement.

WATER SUPPLIES.

Zanzibar.—In Zanzibar extensive improvements were undertaken and all the Arab masonry conduits from the springs supplying the town have now been replaced by iron piping. The Chem-Chem springs were also taken into the general town supply in addition to those at Bububu and altogether 3,000,000 gallons of water are available daily. This is more than is required at present as it has not been practicable to extend the mains to supply the people living near the Eastern town boundary or the crowded Ngambo native areas where stand pipes at the periphery are the only sources of supply. The systematic extension of the mains is accepted in principle by Government but until a town plan is decided upon the Public Works Department are reluctant to lay mains. It is hoped that in 1937 some extensions of the mains will be practicable even if a town plan has not been declared.

Except for a few wells on the town boundary all town dwellers use the piped supply. On the boundary shallow wells are in use and the water is of poor quality. Negotiations are in hand for the filling in of redundant wells and the cementing in of those which are essential. The latter will be equipped with hand pumps.

The quality of the town supply was excellent throughout the year and although sampled regularly each month, there were no traces of excretal *B. coli* in any dilution. In fact the water is untreated in any way and is drunk unboiled and unfiltered. Nevertheless a Patterson Chloronome was fitted at the Saateni water works during the year so that any pollution can be dealt with. The chloronome is so arranged that the water for either spring can be dealt with separately or together and also the water in the central mixing chamber.

Pemba.—At Wete supplies are obtained from a spring from which the water is pumped to a storage tank and thence by pipes to houses and stand pipes. The water is untreated and of good quality; although slight contamination has occurred from time to time the water is not filtered or boiled before use. In addition rain water tanks are attached to several houses and to the hospital.

In Chake Chake water is collected from what is presumed to be a deep spring and is led into a large cement tank where it is chlorinated and afterwards pumped to a high level storage tank, and delivered by pipes to houses or stand pipes. The supply is safe after chlorination.

In Mkoani rain water is collected from a series of godowns into a large tank set in the beach. No pumping is done so that residents are forced to send water carriers for supplies when their own rain water tanks are exhausted. A deep well was dug in the township during the year but it failed to produce water in sufficient quantities to enable it to be used. A small shallow well on the beach is also used but most reliance is placed on a deep well just outside the town.

RURAL AREAS.

Deep-wells—sometimes 60 ft. deep—are in general use and their water is of excellent quality. More wells of this type are needed about the country but to dig one is an expensive and laborious task when it is done by hand. Possibly, if the question of increasing the cattle population of the islands is considered, it will be necessary to sink more wells in areas now without water; to do this it may be necessary to import drilling machinery which could be used all over the country. Small streams are also used but their supply is not regarded with favour and it is usual for shallow wells to be dug beside the stream and water allowed to percolate into them.

Shallow wells—apart from those beside rivers—are used only in certain areas. District Sanitary Inspectors have shown the people how to improve them so as to obtain clean water.

Springs are fairly common and are preferred as a source of supply. People are being taught to dam them and to arrange for the overflow to leave them through a bamboo pipe under which receptacles can be placed.

Offensive Trades.—Those scheduled are much the same as in England except that peculiarly local trades such as cess pit emptying are also included. There are no zoned areas in townships in which offensive trades can be confined, but this may be rectified when a town plan is evolved.

On the whole not much nuisance is caused by offensive trades as most of them are very small businesses. Tanners are disappearing from the towns and the smells they create are diminishing. Lime burning causes some trouble on account of the pungent fumes given off, and the breaking of coconuts for copra results in the accumulation of a foul smelling fermenting fluid, if the breaking floor is not well drained. This matter has received attention during the year and all copra breaking floors in Zanzibar town are now cemented and drained.

Oil milling and soap boiling are carried on in several places in the townships but give rise to little trouble.

CLEARING OF BUSH AND UNDERGROWTH.

In Zanzibar this is controlled by the Medical Officer of Health. All grass and bush on public and Government controlled land is kept cut by gangs of labourers supervised by headmen and by the town district Sanitary Inspectors. In Pemba the work is done by prisoners and station labourers under the control of the District Commissioner. Privately owned land is kept clear by the owners, but it generally requires the service of a sanitary notice to persuade land owners to keep their land clean.

Cows wander all over all townships and help to keep down grass and bushes but, unfortunately, the good they do is outweighed by the anopheline breeding which takes place in pools of water retained in their hoof prints. Arrangements are in hand to have all cows moved out of Zanzibar Township in 1937, similar steps will be taken in Pemba.

In some small villages the District Commissioner is responsible for bush and grass cutting and it is regularly carried out.

In rural areas—particularly in Pemba—an endeavour is being made to persuade hut owners to keep an area of 25 ft. around their huts clear of grass and bush.

The greatest source of nuisance in townships is the throwing into the bush of half coconut shells. These retain water and breed *stegomyia* mosquitoes which were pests until systematic collections were organized and people prosecuted for having their land littered with shells.

Sanitary Inspection.—One European Sanitary Supervisor is employed together with 11 Asiatic and African Sanitary Inspectors. Four Sanitary Inspectors and the Supervisor are paid from Medical votes and the remainder

are paid from municipal funds as their work is concerned so much with municipal affairs. During the year the Supervisor and all eleven Sanitary Inspectors were available for duty. Two Sanitary Inspectors were posted to Pemba townships, six to Zanzibar Town, and one to Port Health work. Two were employed in country districts in Zanzibar Island. In Zanzibar town, with a population of 47,000 odd and 11,000 huts and houses, there are six districts each in charge of a Sanitary Inspector. In each district the Sanitary Inspector is responsible, through his headmen and porters, for road sweeping, scavenging and refuse removal in addition to the routine inspection of houses-let-in lodgings, eating houses, hotels, bakeries, factories, etc. Furthermore he is expected to carry out a survey of all the worst slum properties in his area and to submit proposals for improving the light, ventilation and the sanitation of such properties. The Sanitary Inspectors serve sanitary notices and appear in court in connexion with all prosecutions concerning their areas. It is seen that the town Sanitary Inspectors have a full programme of work which necessitates them working long hours. The Sanitary Inspector employed in Port Health work meets all incoming ships and dhows and vaccinates all immigrants who cannot show evidence of previous vaccination. In addition he is responsible for a staff employed in town and country vaccination.

The two country Sanitary Inspectors were employed in Zanzibar on a rural sanitary survey and routine rural sanitation duties. This is a new departure for Zanzibar as Sanitary Inspectors have never before been posted in country districts. They have achieved some results.

In Pemba one Sanitary Inspector is posted to each of the two larger townships and carries out the same sort of routine as those in Zanzibar. In addition, they are expected to undertake a certain amount of rural work.

The disproportion between the numbers employed in Pemba and Zanzibar is accounted for by the relative sizes of the towns and by the Port Health work existing in Zanzibar. It is the intention, however, that more Sanitary Inspectors will be posted to Pemba when they have completed the course of instruction mentioned in section V.B. The Sanitary Superintendent supervises all the Zanzibar and rural Sanitary Inspectors and in addition a good deal of his time is taken up with the routine duties of the Building Authority since the Medical Officer of Health, with an officer of the Public Works Department, is the executive of the Joint Building Authority.

Sanitary Inspection work was carried out very competently during the year with very little friction and there were few prosecutions in comparison with the large number of nuisances dealt with. Moreover a number of properties were improved to a reasonable standard of sanitation.

Nevertheless it is felt that the Sanitary Inspector staff is insufficient to cope with the rural areas and the addition of four Sanitary Inspectors to the staff in 1937 has been approved; they will be selected from the present staff of African rural dispensers so as to ensure that men will be trained who are willing to live and work in rural areas. At present few Asiatics are willing to live outside the townships.

III. SCHOOL HYGIENE.

A. ZANZIBAR SCHOOLS.

Commencing in June a routine examination of the pupils of the twelve rural schools was carried out, but it was not possible to complete the examination of the town schools before the long vacation commenced.

701 boys were examined, but this figure does not represent the entire population of the schools concerned as difficulties were encountered, such as irregular attendances and reluctance upon the part of some of the parents to having their children examined.

This year, in addition to the usual physical examination, certain laboratory investigations were carried out. Stools were examined for ova of helminths, urine for ova of schistosomes, thick and thin blood smears were taken from each boy and examined for the presence of malaria parasites, and the Kahn test was applied to the serum of each pupil.

On the completion of the school examination treatment was given for the various diseases encountered and seven schools have received treatment so far. Some obstruction was met with, and at Chwaka some of the parents refused to permit their children to receive treatment.

The following tables set out the findings at the examinations.

TABLE I.

The total number of pupils 701, was distributed as follows:—

| Name of School. | Africans. | Arabs. | Others.* |
|-----------------|-----------|--------|----------|
| Chwaka | ... 47 | 2 | — |
| Uzini | ... 38 | 1 | 1 |
| Dole | ... 14 | 31 | 3 |
| Mangapwani | ... 50 | 4 | — |
| Kombeni | ... 61 | — | — |
| Ndijani | ... 64 | 4 | 2 |
| Mkwajuni | ... 15 | 3 | — |
| Donge | ... 29 | 8 | — |
| Mwera | ... 50 | 38 | — |
| Muyuni | ... 53 | — | 1 |
| Makunduehi | ... 98 | — | 1 |
| Kizimkazi | ... 83 | — | — |
| | 602 | 91 | 8 |

*Other includes Comorians, Persians, etc.

TABLE II.

In this table the percentages of the conditions found are detailed in racial groups.

| | | Africans. | | Arabs. | |
|------------------------|-----|-----------|------|--------|------|
| | | 1935 | 1936 | 1935 | 1936 |
| Nutrition— | | | | | |
| Good | ... | 34.9 | 44.3 | 42.9 | 54.9 |
| Fair | ... | 61.5 | 35.8 | 53.6 | 35.1 |
| Poor | ... | 3.6 | 19.7 | 3.5 | 9.8 |
| Cleanliness— | | | | | |
| Good | ... | 46.8 | 36.2 | 35.8 | 73.6 |
| Fair | ... | 49.6 | 45.1 | 60.7 | 14.2 |
| Bad | ... | 3.6 | 18.4 | 3.5 | 12.8 |
| Vaccination | ... | 45.8 | 45.5 | 64.2 | 73.6 |
| Nose and throat | ... | 1.8 | 1.3 | 3.5 | 2.1 |
| External eye | ... | 0.9 | 27.9 | — | 15.3 |
| Ears | ... | 1.8 | 9.9 | — | 9.8 |
| Teeth | ... | — | 37.8 | — | 50.5 |
| Heart, etc. | ... | 2.7 | 1.9 | 10.5 | 4.3 |
| Lungs | ... | — | 1.9 | 3.5 | 2.1 |
| Enlarged spleen | ... | 73.3 | 39.3 | 78.5 | 48.3 |
| Kahn test | ... | — | 12.1 | — | 7.6 |
| Blood M.P. | ... | — | 39.3 | — | 40.5 |
| Urine—Bilharzia | ... | 13.7 | 17.1 | 3.5 | 15.3 |
| Stools—Hookworm | ... | 97.2 | 72.5 | 89.2 | 53.6 |
| Stools other helminths | ... | — | 64.4 | — | 25.2 |

NOTE :—As only eight children other than Africans and Arabs were examined they have been excluded from the above table.

TABLE III.

Comparative average heights and weights by Age-groups.

| | | 1935 | | | | | | | |
|--------------|-----|-----------|------|------------|------|-------------|------|-------------|------|
| | | 6-8 years | | 8-10 years | | 10-12 years | | 12-14 years | |
| | | ins. | lbs. | ins. | lbs. | ins. | lbs. | ins. | lbs. |
| Africans | ... | 48.8 | 53.5 | 50.7 | 59.8 | 53.2 | 67.9 | 57.7 | 83.9 |
| Arabs | ... | 45.7 | 45.8 | 48.7 | 53.5 | 52.3 | 65.2 | 57.3 | 83.4 |
| | | 1936 | | | | | | | |
| Africans | ... | 48.4 | 47.2 | 51.9 | 58.4 | 54.1 | 66.4 | 56.7 | 77.4 |
| Arabs | ... | 47.8 | 49.8 | 51.05 | 56.7 | 52.9 | 63.2 | 58.7 | 82.4 |
| DOLE SCHOOL. | | | | | | | | | |
| Africans | ... | Nil | | Nil | | 57.0 | 81.0 | 59.9 | 92.8 |
| Arabs | ... | Nil | | Nil | | 53.4 | 75.4 | 58.6 | 85.1 |

Judgings by this year's table the Arab child is not physically inferior to the African of the same age although this appeared to be the case in 1935; a fact possibly explained by the very small number of rural Arab children seen that year, 28 as compared with 91 this year. It is of interest, however, to compare the above figures with those of Dole School, which is the only Government Boarding School for boys in the Protectorate and in it the boys receive a diet which is planned to provide an adequate amount of calories and vitamins. At Dole the average height and weight of the African pupils is above that of all Arabs and the children in "bush" schools where food is scarce and of poor quality.

NUTRITION.

It is difficult to set any hard and fast standard of nutrition as so much depends on that variable factor, the examining Medical Officer.

In Table II, 44.3% Africans and 54.9 Arabs are recorded as being well nourished; the remainder consists of boys who showed definite manifestations of either quantitative or qualitative malnutrition such as poor physique, obvious under weight, sodden white patches at the corners of the mouth, "dirty" eyes, glossitis and scaly dry skin.

During the course of the examination an endeavour was made, by questioning the boys, to find out the type of food they were given and the number of meals that they eat each day. It appeared to be exceptional for a child to receive any food before coming to school. Furthermore, after returning home the children often have to wait some hours before they are fed and the evening meal, consisting usually of rice, cassava and occasionally tea, seems to be the total regular food intake of the majority although, of course, odd fruits and scraps are picked up and consumed. Children whose homes are on the coast are often given fish, but those who live in the interior get it very occasionally, usually in the dried form. Some boys declared that their sole meal of the day was bananas. Meat in the country is unknown except on special occasions and milk in its raw state is never given to the children as a drink. They are thus deprived of most of the important protective foodstuffs.

The school hours are from 7.30 to 12 noon, for the younger boys, and 7.30 to 12.30 for the older boys; many of the children have to walk considerable distances—up to four miles in some cases—to reach the schools. Under these circumstances it is not surprising that many of them are not in a condition to benefit by education and some of the teachers complained of the difficulty in getting hungry children to take any interest in what they were being taught.

In Donge, Mangapwani and Muyuni evidence of malnutrition was more noticeable than in any of the other schools.

CLEANLINESS.

Of the Africans 36.2% are described as "cleanliness good" and Arabs 73.6%. The remainder show degrees of dirt varying from mere "grubbiness" from the soil to scabies, infected scabies, dermatitis, tinca and often a combination of these—all of which are due to bad personal hygiene.

Many rural teachers set an example of cleanliness to the pupils but in a number of cases the teachers' cleanliness was not all that could be desired. The value of example and teaching in personal cleanliness was seen when examining the boys of the Government Central School where cleanliness is the rule and teachers are invariably clean and well dressed.

In the rural schools the wearing of a "Kanzu" (a cotton garment extending from neck to ankle) makes many of the skin diseases intractable; in some schools the average boy possesses only one which he wears during the day and sleeps in during the night. The "kanzu" is generally filthy and this is not to be wondered at, for the boy who possess only one has little opportunity of washing it. In the case of scabies treatment is useless unless the patient has clean clothes to change into whilst the others are being boiled. In one school (Kombeni) 26.2% of the boys suffered from scabies.

VACCINATION.

45.5 of the Africans and 73.6 Arabs bore the marks of successful vaccination.

Dispensers are now engaged in vaccinating those boys who have not been previously done. Difficulty is caused by the fact that the boys run away almost invariably when the vaccinator appears on the scene; few teachers have been at pains to comply with the law which lays down that all children attending school must be vaccinated.

TEETH.

Dental caries is extremely common. The figures in Table II shows the percentage of boys who have obvious dental decay. The prevalence of dental decay is probably due to two factors:

- (a) a diet of low nutritional and vitamine value and
- (b) lack of attention to the cleaning of the teeth.

To combat the latter a circular was issued in 1935 by the Education Department instructing teachers to supervise the daily cleaning of the teeth.

EYES.

Attention being drawn to the presence of avitaminosis amongst the rural population, eye symptoms of this complaint were carefully watched for and a number of children showed the "dirty eyes" of avitaminosis, and cases of xerophthalmia were also seen.

Angular conjunctivitis, blepharitis and trachoma are common complaints among the pupils.

EARS.

The presence of plugs of wax in the majority of ears, which would necessitate a preliminary syringing, prohibited the making of a really accurate estimation of the amount of ear disease present in the pupils. Furunculosis of the external meatus, due to dirt, is common and a number of cases of chronic otitis media were seen.

HEART.

Organic disease was seen rarely and only two boys showed evidence of mitral stenosis. But, as is to be expected, hæmic murmurs due to advanced ankylostomiasis and anæmia are common.

LUNGS.

A few cases bronchitis were met with, but no case of tuberculosis of the lungs was seen.

SPLEEN.

The figures for splenic enlargement are lower than those of the last year, the discrepancy is accounted for by the fact that last year only three rural schools were examined and two of them were situated in a hyperendemic area.

LABORATORY INVESTIGATIONS.

Helminthiasis.—Infection with *A. duodenale* and *ascaris lumbricoides* is almost universal and many boys showed the presence in their stools of the ova of two or three helminths; it is to be regretted that treatment is of so little value as re-infection occurs rapidly. Still some benefit is obtained, but until the provision of adequate latrines is universal and the evils of indiscriminate defæcation are more clearly recognized it is evident that no great improvement can be expected.

SCHISTOSOMIASIS.

In four schools, Dole, Kombeni, Donge and Muyuni a high percentage (varying from 30% to 40%) of boys had ova of bilharzia in their urine. At Dole close investigation of the seventeen boys who had positive findings showed that thirteen of them came from Pemba; of the remaining four, two came from Donge, one from Muyuni and the fourth admitted to having bathed in a swamp in a known infected area.

The boys at Dole have received treatment with beneficial effects, but it is too soon to say if "cures" have been achieved. It is not possible to treat the pupils in other rural schools as the tediousness of the course of injections necessary would effectually prevent children from attending for treatment, even if their parents did agree.

Blood Parasites.—The number of pupils with malarial parasites in their blood is not unduly high.

Kahn Test.—12.1% of the Africans and 7.6% of the Arabs had positive Kahns, whether due to syphilis or yaws it is impossible to say as clinical signs were indefinite. It is remarkable that no case of florid yaws was seen during the course of the examination.

An endeavour was made to compare the above figures with those obtained from adults in areas adjacent to the schools. Out of 58 bloods taken 34 were positive, giving a percentage of 58.6.

The percentage of positive Kahns in a total of 693 Africans and Arab children was 11.5% giving a difference of 47.1 between children and adults. As yaws is largely a disease of children it may be that the difference of 47.1% in the adults represents acquired syphilis.

B. PEMBA SCHOOLS.

During the year 370 school children were examined as compared with 411 seen in 1935. A visit, by previous arrangement with the Head Teacher, to Jambangome school resulted in the examination of only two children. Very few children were available for examination at each school and this may be due in part to the pupils being employed in scaring birds away from the rice fields and in the reaping of rice. The examinations were carried out, however, at approximately the same time of year as in 1935.

The following is the analysis of the examinations and it is to be noted that no attempt has been made to separate Africans and Arabs as it is considered that the numbers of pure blooded Arabs are too small for them to be considered separately.

| Diseases | Africans and Arabs. |
|----------------------------|---------------------|
| Nutrition | |
| Good | ... 30.9% |
| Fair | ... 46.1 |
| Poor | ... 23.0 |
| Cleanliness | |
| Good | ... 35.5 |
| Fair | |
| Defective | ... 64.5 |
| Nose and Throat | ... 3.9 |
| Vaccination marks | ... 71.6 |
| Defective Vision | ... 2.6 |
| Diseases of Ear | ... 1.4 |
| Dental Caries | ... 57.3 |
| Heart Disease | ... 0.8 |
| Splenic Enlargement | ... 64.7 |
| Diseases of the lungs | ... 5.1 |
| Bi'harziasis | ... 51.46 |
| Ankylostomiasis | ... 38.36 |
| Ascariasis | ... 19.01 |
| Trichiasis | ... 20.23 |
| Malaria Parasites in blood | ... 31.11 |
| Other Diseases | ... 6.02 |

Nutrition.—The state of nutrition amongst the school children in the towns is better than amongst those in the rural schools, probably owing to the greater prevalence of diseases in the rural districts. Signs of avitaminosis, such as Bitot's spots and early degrees of xerophthalmia are not infrequently seen amongst the children of both the rural and town schools.

Cleanliness.—The children's clothing in general gives one the impression of being filthy and this is borne out by the fact that 25 out of 85 pupils questioned at Chake Chake said that they had no change of clothing. The treatment of scabies is impossible under these conditions and is a waste of the therapeutic agent.

Diseases of the Nose.—Nasal polypi are the usual defects but no inconvenience appears to be caused by them.

Defects of the Eyes.—Were presented in 2.64% of the pupils. They consist of defective vision, in some cases already remedied by glasses, and two cases of blindness in one eye due to injury.

Diseases of the Ear.—The few cases seen (1.43%) were the result of otitis media. Large accumulations of wax were present in 36.39% of the pupils.

Teeth.—Dental caries is present in 57.31% of the school children, the highest incidence being in Mtangatwani (89.47%) and Kengeja (75.67%) and the lowest in Chake Chake school (38.12%). This seems to be a very high percentage.

Diseases of the Heart.—0.86% consisted of three cases of mitral incompetence.

Splenic Enlargement.—Is still high amongst the children, reaching 81.82% in Mtambwe and 75% at Mkoani.

Diseases of the Lung.—5.12% as determined by physical signs. They comprised six cases of asthma, ten of catarrh of the larger bronchial tubes, one of old standing pleurisy and one suggestive of bronchiectasis resulting from pertussis.

Bilharziasis.—Infection with this parasite still occupies a prominent position amongst the diseases to which the children in the Southern half of the island are subjected. The highest incidence is again amongst the children of Ngwachani School (84.31%). The incidence among the Chake Chake School boys has dropped slightly to 27.78%, probably as a result of treatment at the hospital.

Ankylostomiasis.—There has been a considerable drop in the incidence of this disease, to 18.35%, amongst the Chake Chake boys as the result of treatment. The highest incidence is amongst the rural schools especially Kiwani where 54.84% of the children are infected.

Ascariasis and Trichiiasis.—Are both more common in the rural schools, excepting Mtambwe which is the Wete school, and Matangatwani.

Malaria Parasites.—Were found in the blood in 31.11% of all pupils. This figure is probably too low as Dr. McCarthy found a much higher incidence at an examination at a later date.

Other Defects.—Were one case of umbilical hernia, one of ventral hernia, 12 pupils with enlarged liver, two cases of yaws, two of eczema, one pupil with hydrocephalus and one flat chested.

C. GIRLS SCHOOL—ZANZIBAR AND PEMBA.

In Zanzibar the newly appointed Lady Medical Officer examined 82 of the girls in the Government Girls School and in Pemba the District Medical Officer

examined 18 at the Chake Chake School. In neither case are the numbers sufficiently large to allow of the findings being presented in the form of percentage and only a general review can be given this year.

Cleanliness.—Was fairly good in the Zanzibar girl's school as a whole; the girls living in the school hostel were particularly clean. In Pemba the girls were cleaner than the boys.

Nutrition.—Zanzibar hostel girls very good—day girls only fair. Pemba girls fair.

Vaccination.—Most of the girls are vaccinated.

Nose and Throat.—A few girls have enlarged tonsils and nasal polypi.

Eyes.—A few cases of trachoma were seen.

Ears.—A few cases of otorrhœa and otitis were seen but the smallness of the number contrasted markedly with the very large numbers of running ears seen amongst the poorer class of girls attending the outpatient department.

Teeth.—Caries of the first dentition is common both in Pemba and Zanzibar and suggests a lack of attention to the cleanliness of the mouth. The older girls in Zanzibar attend the dental surgeon regularly and their teeth are mostly in good condition, this was not the case in Pemba where most of the girls showed signs of caries.

Heart.—Only a few cases were seen of tachycardia and hæmic murmurs associated with anæmia.

Lungs.—No cases of disease were observed.

Spleen.—Spleens were enlarged in about half the Zanzibar children and in most of the Pemba girls.

Blood Films.—Positive films corresponded roughly with the enlarged spleens.

Stools and Urine.—Ankylostome, bilharzia, ascaris and trichuria eggs were found present in much the same proportion as amongst the boys.

Other Diseases.—A mild anæmia was common, associated chiefly with intestinal parasites. A few cases of scabies were seen.

D. DENTAL CONDITION OF SCHOOL CHILDREN.

During the year the routine examination and treatment of school children was carried out as usual, except that for various reasons the dental surgeon was unable to spend much time either in the country schools or in Pemba. Most of his time was spent dealing with the schools in Zanzibar Town.

The following is a summary of the work done for school children during the year :—

| | 1935 | 1936 |
|-----------------------|---------|------|
| Extractions | ... 704 | 697 |
| Fillings | ... 334 | 279 |
| Root fillings | ... 4 | 3 |
| Sealing and polishing | ... 32 | 54 |

It is the opinion of all the Medical Officers who dealt with school children and of the dental surgeon that the poor condition of children's teeth is due, primarily, to under nutrition in early life and later to neglect.

IV. HOUSING AND TOWN PLANNING.

A. URBAN HOUSING.

ZANZIBAR TOWN.

Previous reports have made it clear that there are two distinct areas to be dealt with in Zanzibar Town. The first situated West of the creek and tidal basin which bisects the town, is composed mostly of stone buildings of a permanent type and is occupied by Indians, Europeans and a few Africans. The second, East of the creek, is predominantly African and the African type of dwelling is almost universal although a number of Indians live there, especially in main shopping streets.

(a) *West of the Creek.*—In the “stone” town no large scale effort at Town planning was attempted during the year, but the general principle was adhered to that, so far as possible, buildings of a temporary type should be acquired and demolished, the site cleared and no more temporary building allowed in the area. Care was taken that new buildings did not add to the congestion of the town and every opportunity was taken to add to the width of narrow lanes and so increase the light and air available.

The stone town housing continued to be poor both quantitatively and qualitatively. Overcrowding is the rule and poorer class Indians do not appear to resent bad conditions and make no effort to insist on improvements being carried out.

It is relevant here, whilst discussing the Stone Town, to quote from the Medical Officer of Health’s report of 20 years ago. “It will be realized that the development of a definite scheme for town improvement is surrounded by most difficult problems when it is remembered that the whole area available for bazaar houses is already densely built over, that the majority of these houses are insanitary and lacking in light and ventilation, that all the houses are fully occupied, that many Asiatics are living in absolute squalor, that from age or for want of repairs and upkeep many houses are reaching a state when repairs become impossible, that if a house is ruled unfit for human habitation or structurally dangerous the eviction of the occupants only leads to more gross overcrowding elsewhere and that nothing is achieved by the patching of individual houses in a block of buildings which ought to be considered as a whole.

Although the problem is indeed one of great difficulty it must be tackled, since with the passage of years conditions are only becoming worse. It has previously been urged that the Administration should build a new commodious block of houses, designed to meet the household requirements of Indian bazaar residents in Ng’ambo; into this block families and occupants of insanitary houses or blocks of houses could then be evicted without undue hardship.

The administration should further set aside a definite annual sum of money for town improvement, to be expended over a period of many years in the gradual acquisition of whole blocks of insanitary houses and their reconstruction on hygienic lines.

Plans for new buildings or for alterations and additions to existing buildings are submitted by the Director of Public Works to the Medical Officer of Health, but without a definite comprehensive scheme for town improvement and the visible example of some new well-designed blocks of houses, it is difficult to prevent individuals from adding obstructions to neighbouring houses when the whole group may already be hopelessly obstructed on all sides by many hundreds of yards of irregularly massed houses, and when infinitely worse existing cases of obstruction to light and ventilation can be pointed out close at hand. Again it is often impossible to attack a private owner on the obvious need for repairs and structural alterations in his houses when he can point to Government and Wakf owned houses in a worse state of dilapidation”.

This report might have been written this year—conditions are very much the same except that, as detailed below, efforts are now made to improve individual properties, generally in the face of determined opposition from the owners.

A total of 122 houses let in lodgings was surveyed during the year and by the end of the year plans had been submitted for improvement in 29 cases. The plan printed in this report shows a typical section of a building which is made up of nearly six separate houses. It is to be noted that none of the inner rooms can receive any light and air and although labelled "godowns" some are inhabited. Under such circumstances it is difficult to imagine why tuberculosis is not more rife than it is. The following plan of the same floor shows what can be done to improve matters and, in fact, a fairly satisfactory result was attained in this instance by the provision of three internal open spaces. These internal spaces although they are cut off from the breeze are an improvement, but it is after all, only a palliative measure. To effect any substantial improvement in the housing of the stone town extensive re-building would be required.

Another difficulty is that among the property owners of Zanzibar, there is little evidence of the realization of any social responsibility, the sole consideration seems to be the question of how much can be got out of a property with the minimum expenditure. It is worth quoting here from the 1933 Report of the Scottish Departmental Committee on housing. Speaking of working class property it is stated that:—

"We have received evidence that when working class house property is properly administered it may be necessary to spend as much as 40% of the gross rental on repairs and management, but 30% of the gross rental is a reasonable figure in the case of a scheme for various types of houses."

Zanzibar stone house property is not up to working class housing standards in Scotland and moreover it is subjected to climatic influences which accelerate deterioration, but it is quite safe to say that in none of the many hundreds of properties dealt with by the Medical Officer of Health was there evidence that any system had been adopted by owners for dealing systematically with repairs and upkeep. The method generally followed is to await such time as the building authority or the Medical Officer of Health serves a notice for repairs to a dangerous structure, or the abatement of a nuisance, and then to carry out the minimum amount of work possible.

(b) *East of the Creek*.—In this "native town" of some 8,000 huts an endeavour has been made to enforce such regulations governing hut siting as can be implemented without causing hardship. Times are hard and poverty is common in Zanzibar and it is usual for tenants to build their houses on leased land. Money is borrowed to build—the work is seldom good, and, except for the favoured few who have other property or well paid employment, the ownership of a hut is almost certain to lead to the most serious financial complications because the cost of repairs is high. In consequence it is necessary to proceed very circumspectly when endeavouring to improve housing as instances often occur when it appears obvious that certain improvements should be effected but, on close enquiry, it turns out that if insisted upon the additional cost would cause the complete financial failure of the hut owner, who would then be sold up by his ground landlord and be left to find accommodation as best he could.

The system adopted during the year was that all building permits for repairs and upkeep were issued on demand by the District Commissioner, provided no extension of the building was contemplated or any structural alterations were intended. This system worked only moderately well but applicants made out their application in the District Commissioner's office and obtained their permits without much delay. Duplicates of the permits were sent to the Health Office and district Sanitary Inspectors made sure that the terms of the permit were complied with. Where new huts or structural matters were involved the applications were sent to the Health Office when a district Sanitary Inspector reported on them to the Medical Officer of Health. So far as new huts were concerned no new buildings were permitted which encroached on sanitary lanes or the Lanchester road scheme.

Efforts were made to persuade hut owners to provide their houses with adequate ventilation, light, kitchens and latrines; but to arrange for space in which to fit the outbuildings required for a kitchen and latrine often proved difficult.

The above procedure, however, is merely making the best of a bad job but aerial photographs have been taken of the town so that a plan can be prepared on which to base a scheme of town planning.

The contracts between landowners and hut owning tenants require adjustment as many of those people who have money are unwilling to spent it on improved buildings since their tenure of the plot they build on is usually insecure.

During the year the following applications in respect of native type huts were dealt with:—

| | | |
|---------------------|-----|-------------|
| To erect new huts | ... | 386 |
| To rebuild old huts | ... | 383 |
| To repair huts | ... | 835 |
| | | <hr/> 1,604 |

(c) *Pemba Townships (Mkoani, Wete and Chake Chake).*—Conditions in Pemba townships closely resemble those in Zanzibar except that the “stone” and “native” towns are not separate. As in Zanzibar huts and houses are built on all varieties of unsuitable sites ranging from canyon bottoms to knife edge ridges and congestion is acute and adequate drainage and ventilation often impossible.

Few streets exist and traffic, apart from the main roads, proceeds along sandy tracks.

During the year the Medical Officer of Health assumed control of the building authority work in all townships and the system has worked smoothly. The general principles applied in Zanzibar were introduced into Pemba and piecemeal improvements were effected everywhere. The total number of building applications dealt with in 1936—mostly concerned with repairs was:—

Wete 187, Chake Chake 190. Mkoani 64.

B. RURAL HOUSING.

In both Pemba and Zanzibar small road-side villages exist which are composed of a few Indian shops and a huddle of huts. They all resemble each other in that the only town planning observed is to avoid encroachments on the road area and the buildings are all of as poor a type as can be made to stand.

In the country districts people live in villages or small groups of houses; seldom in isolated houses set in their own gardens, as is the custom elsewhere. But wherever they are built the principles governing their construction are the same. They are usually one room huts, dark, only moderately clean and generally unprovided with windows, kitchen or latrines. They are built of mangrove poles plastered with coral and mud and have coconut palm leaf roofs. Despite the absence of windows, and with only one door, ventilation is not really defective as a space is left between the walls and roof and in many cases the roofing material is very open in texture. During the course of a rural sanitary survey the following facts were recorded:

| Mudiria | One room huts. | Population. | Two rooms or more. | Population. | Stone houses. | Population. |
|------------|-------------------|-------------|-----------------------|-------------|------------------|-------------|
| Mangapwani | 2,994 | 6,341 | 741 | 2,107 | 33 | 145 |
| Makunduchi | 3,499 | 7,874 | 1,516 | 5,287 | — | — |
| Mkokotoni | 5,864 | 14,309 | 1,283 | 3,960 | 91 | 274 |
| Chwaka | 1,593 | 3,151 | 437 | 1,299 | — | — |
| Chaani | 2,999 | 6,025 | 764 | 2,243 | 11 | 60 |

It is seen that the average population in the one room huts is 2.2 a fact accounted for by the low fertility rate amongst the people, and because it is the custom for young male adults to build their own houses about the time of puberty. In houses with two rooms or more the number of people living in them averaged three. This means that the actual accommodation in rural houses is nearly adequate, so far as space goes, and this is borne out by actual measurements of five hundred huts when it was found that, counting two children as

equal to one adult, each person had from 50 to 100 sq. ft. of floor area and from 330 to 400 cubic feet of space. In view of the good roof ventilation the fact that from 50% to 90% of the huts had no windows is not very important. The chief need in rural housing is latrines as amongst 22,000 huts latrines were provided in only 3,000 instances, and most of those were seen in an area to which special sanitary supervision has been given over the last two years and the number of latrines had been raised from 226 to 861.

V. FOOD IN RELATION TO HEALTH AND DISEASE.

Food Consumed.—In previous reports mention has been made of the various foods which it was considered were eaten generally by the people of Zanzibar and Pemba. Several surveys were undertaken in Pemba and Zanzibar during 1936 and it is now possible to state accurately what is eaten by the majority of the people. No attempt was made to investigate closely the dietary of the rich as it became evident that their dietaries contain all the necessary vitamins and have an adequate caloric content.

Coconuts, rice, potatoes and cassava form the basis of all African, poor Indian and working class Arab dietaries. The proportion in which they are eaten depends on the economic situation of the consumer. If funds permit rice is eaten daily, and if it cannot be obtained then cassava or sweet potatoes very largely take its place. Coconuts are used by poor and rich alike, the oil being almost the only fat used by the poorer classes in cooking curries, for frying and for stews.

Vegetables consumed are restricted mainly to sweet potatoes, yams and pumpkins. Of these the most important are sweet potatoes which are cultivated extensively. Wild spinach is eaten but the method of cooking it, by boiling it several times in fresh water, renders it valueless as a source of vitamins. Ground nuts are grown but do not thrive in Zanzibar and are not used very widely. Potato tops and cassava leaves are used as vegetables.

Bananas are grown all over both islands and are perennial. The fruit is eaten raw, steamed and boiled and is consumed by all country dwellers and to a less extent by town people.

Cereals include Kaffir corn, Maize and Bulrush millet. They are grown chiefly in the east coast of the island but some grain is grown by most cultivators. It is eaten when available but crops are light everywhere and none of the cereals bulk very largely in the diet of any section of the community except the Indians, who consume imported grain.

Legumes.—Beans and peas—chiefly cow peas—are the most important although red and green gram is grown to a small extent. Dried beans and peas are an important item in most dietaries.

Fruit.—Many varieties of fruit grow readily—the most common being mangoes, oranges, durians, bread-fruits, pine-apples, paw-paws and tomatoes. All are eaten when in season by anyone who can obtain them, but it is rare to find any small farmer deliberately cultivating fruit and, in consequence, fruit is a rarity in many parts of the island despite the fact that as much as 350 tons of fruit is exported annually.

Milk and Meat.—Cows are kept in most villages in small numbers but only what milk is unsaleable in the townships is consumed locally. Very few people drink cow's or goat's milk as a beverage and its use is generally restricted to tea. Meat is scarce and dear and the bulk of the population seldom has a chance to get it. Similarly goats, sheep and poultry are kept but again their meat is scarce and dear; eggs are eaten infrequently.

Fish.—Fish is eaten everyday by all except the poorest people. It is consumed fresh and dried and is eaten in curries or as a relish in vegetable stews; dried shark and salted fish are very popular. Numbers of people in the Zanzibar island are often without fish for considerable periods which is very curious in a small island and may indicate that fishing methods are defective.

Dietaries.—The following sample meals illustrate the amount and variety of food generally eaten.

- I. A day's menu of a moderately well off town dweller in Pemba earning perhaps Shs. 50 p.m.
- Morning. 4 oz. bread, two cups of tea, $1\frac{1}{2}$ oz. milk, sugar 2 oz.
- Midday. Imported rice about $1\frac{1}{2}$ lbs. for which may be substituted cassava or sweet potatoes. Fish 4 oz., or meat with tomato or other vegetable. Fruit—such as mango or orange—if obtainable.
- Evening. Bananas—about 2 lbs.—cooked in coconut juice with 4 oz. of fish and a cassava cake of 4 oz.
- II. Mtumbatu fisherman's menu. Earnings perhaps Shs. 20 a month but cultivates his own garden and, of course, gets his fish free,
- Morning. Tea—generally with no milk or sugar, about 8 oz. of cold boiled cassava or sweet potatoes.
- Midday. Ugali (a porridge of cassava, rice or maize boiled with water and salt) $1\frac{1}{2}$ lbs. with $\frac{1}{2}$ lb. of curried fish.
- Evening. Rice—locally grown, if available, or imported— $1\frac{1}{2}$ lbs. With curried vegetable about $\frac{3}{4}$ lb. A relish of dried fish may be added.
- III. Menu of an extremely poor African countryman,
- Morning. $1\frac{1}{2}$ lbs. cold cassava.
- Evening. 2 lbs. porridge (ugali) made of cassava or 2-3 lbs. or unripe bananas. This is supplemented occasionally by a few ounces of dried fish.
- IV. African town dweller—out of work and living on his friends.
- Morning. 2 ozs. bread, $\frac{1}{2}$ lb. cold boiled cassava.
- Evening. Boiled cassava—2 lbs. or more if available.
- V. African town dweller earning Shs. 25 p.m.
- Morning. Tea—no milk or sugar.
- Midday. Cold boiled cassava 1 lb.
- Evening. Sweet potatoes 2 lbs.—occasionally a little fish, fruit or vegetables are added. Rice is eaten instead of potatoes if it can be afforded.
- VI. African town dweller earning Shs. 50 p.m.
- Morning. Tea with milk and sugar. Bread 2-4 oz.
- Midday. 1 lb. rice, curried with 1-2 oz. dried or fresh fish.
- Evening. $1\frac{1}{2}$ lbs. rice or raw bananas or sweet potatoes with fish curry 4 oz., sometimes meat. Occasionally cassava or potatoes replace the rice.
- VII. Shihiri Arab—water carrier earning Shs. 10 to 15 p.m.
- Morning. Cake of wheat flour made with sugar and fried in coconut oil.
- Evening. Cassava 2 lbs. or sweet potatoes. Seldom eats fruit or meat. Saves every cent against his return to Muscat. Lives on this or a similar diet, with what free meals or gifts he can get, for perhaps 8 months at a stretch.

Only one conclusion is possible after a study of these diets—many are inadequate. Several of them are deficient in vitamins although this is compensated for to some extent by sauces and relishes made of green vegetables which are often eaten with stews; most diets are deficient in protein and fat. The best of the diets detailed is inferior to the scales in force at the mental hospital and prison, which were set out in the annual reports of this department for 1934 and 1935.

AVAILABILITY OF FOODSTUFFS.

In the following table is set out the amount per head of the common foodstuffs imported into Zanzibar in 1935 and 1936.

| | Poundage per head imported. | | |
|---------------------------------------|-----------------------------|-------|---------------------------------|
| | 1935 | 1936 | 1936 Total value of imports. |
| | | | £ |
| Rice | ... 158 | 136.2 | 142,426 |
| Wheat | ... 2.2 | 2.2 | 2,327 |
| Millet | ... 14 | 7.0 | 3,778 |
| Maize | ... 5 | 4.6 | 1,697 |
| Pulses, legumes, etc. | ... 20 | 20.0 | 14,768 |
| Sugar | ... 48 | 33.0 | 27,414 |
| Tinned milk | ... 1.5 | 1.0 | 5,491 |
| Cattle, goats and sheep for slaughter | ... 4 | 4.6 | 11,650 |
| Dried fish (shark mostly) | ... 4 | 0.7 | 2,376 |
| Edible fats | ... 2.75 | 2.4 | 13,037 |

It is seen that a considerable quantity of foodstuffs are imported, although they are consumed nowadays chiefly by the richer people. This unexpected import trade of foodstuffs destined for a fertile island is due to two causes—first that in the past the economic importance of the export crops, cloves and copra, overshadowed food crops and, secondly, money being then plentiful imported food was more easily bought than grown. The world wide depression of recent years has tended to alter this state of affairs—clove prices have dropped and copra production is insufficient to make up the difference in cash value. In consequence less money is in circulation and the average poorer class citizen cannot readily buy much imported food, as a result the local production of food has been stimulated and is being actively encouraged by the Government. The younger generation, however, will not willingly undertake the prolonged labour of rice growing for a relatively poor return of 6 cwt. per acre which is the normal yield in Zanzibar. This is particularly unfortunate as locally grown rice is eaten with its germ and pericarp whilst all imported rice is polished.

Meat, dried fish and edible fats are imported; all are expensive and very little meat or fats reach the man in the streets in any quantity as they are absorbed by the Indian, Arab and European communities. Improved fishing methods would make dried and fresh fish cheaper and more readily available. Similarly the local production of meat, milk and fats (ghee) might well be increased; until this is done it is clear that the price of these commodities will render it impossible for most people to obtain them except occasionally as luxuries. In this connexion the traffic in ghee during the last two years is of interest:—

| | Cwts. imported. | | Value |
|-----------------------------|-----------------|---------|--------|
| | 1935 | 1936 | 1936 |
| | | | £ |
| Ghee (clarified butter) ... | 500,454 | 363,446 | 10,966 |
| Ghee (vegetable) ... | 33,835 | 21,725 | 325 |
| Ghee (fish oil) ... | 177,454 | 176,908 | 1,746 |

The Present Situation.—The fact having been established, in 1934, that the inmates of the mental hospital and prison were suffering from vitamine deficiency resulted in a review of their diet scales which were found to require extensive modification. As a result of the introduction of more scientifically planned diets a very marked improvement in the health of these people was observed and this is discussed in Section VII.

With these facts must be considered the health of the school children and the medical officers who have examined them every year stress the fact that both quantitatively and qualitatively they are underfed.

Rural health surveys, carried out in 1936, leave no room for doubt that generally the population is under nourished although one medical officer considers that “most of the ill health and poor nutrition arises, not so much from lack of food as on account of the continual battle against parasitic diseases (ankylostomiasis, bilharzia, malaria, etc.). He qualifies this by the statement that “unsuitable and insufficient food is given to children in all areas during the weaning period and early childhood and this is likely to be the cause of a good deal of ill health in later life”.

Examinations of candidates for the local police force throughout the year involved the rejection of some 65% of them because of their poor physique.

These facts show that malnutrition is a serious matter in Zanzibar; although the ultimate poor state of health is due in part to parasitic diseases, yet it is accepted that with ample supplies of suitable food even heavy parasitic infestation can be supported without obvious detriment to health. More food, and food of a better quality, is needed in Zanzibar.

Attempts being made to improve food supplies.—As the health of the school children is a vital matter proposals have been made for the introduction of a scheme for feeding them at school. Investigation is proceeding into the practicability of the suggestion and one of the major questions is whether there are enough cows in the Protectorate to render sufficient milk available.

A variety of oil palm having a good oil yielding pericarp has been introduced with a view to extended propagation and distribution and the subsequent

provision of an oil rich in Vitamine A which may replace the now universally used "tui" (coconut oil emulsion) in native cookery. The Agricultural Department have extensive trials in progress and already a number of young plants are available for distribution. Meanwhile experimental consignments of red palm oil have been obtained from Tanganyika Territory and so far the actual use of the oil in a few selected eating houses and the asylum has proved popular. This oil has the added advantage that it costs sixteen cents a pound as against anything from 56 cents to Shs. 3 a pound for ghee. It competes in price even with "tui" which costs about $1\frac{1}{2}$ cents per oz. of coconut oil.

The Agricultural Department are endeavouring to improve the quality of foodstuffs produced and to this end have in hand large scale experiments at their station at Kizimbani.

It has been stated that meat, milk and animal fats are scarce and dear. The Agricultural Department are now engaged in investigating the possibility of using the comparatively large areas of "wanda" country (coral rag covered with vegetation) for pasture, and if this proves practicable it may be possible to increase the cow population and so produce ghee on a large scale. As a by-product butter milk, which is esteemed locally, would be available at a low cost.

Wholesomeness of Food.—Very little is known about the chemical composition or vitamine content of local foodstuffs. The question of research into native foodstuffs was considered by the Medical Directors of East Africa at their annual conference and will be further considered next year. It is possible that arrangements will be made for a comprehensive investigation to be carried out into all East African foodstuffs. Until this is completed any opinion as to the relative values of East African foods must be based on analyses and experiments carried out elsewhere, but it is possible that the conclusions arrived at do not apply to Zanzibar foods.

There was no evidence that any of the local foods or those imported were unwholesome in any way except for those shown in the following table which were condemned and destroyed.

Control was continued over all town retailers and hawkers of foodstuffs and all premises such as bakehouses, soda water factories and slaughter houses were inspected regularly. Milk supplies were also inspected daily; in the absence of any public or private facilities for the scalding and washing of milk cans and bottles all milk is bound to be more or less contaminated.

The following table gives the amounts of the various foods condemned during 1936 as unfit for human consumption.

| 1936. | | lbs. |
|-----------------------------------|-----|---------|
| Chocolates, Toffees, Sweets, etc. | ... | 597 |
| Wheat flour | ... | 846 |
| Condensed Milk | ... | 2,509 |
| Dates | ... | 8,355 |
| Bread | ... | 40 |
| Fruit-various kinds | ... | 85,845 |
| Fish (wet) | ... | 303 |
| Fish (dry) | ... | 1,500 |
| Meat | ... | 22 |
| Vegetables | ... | 760 |
| Tongue | ... | 1 tin |
| Sardines | ... | 1 tin |
| Plums and Raspberries | ... | 39 tins |

B. MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION.

In Schools.—As remarked in the 1934 annual report hygiene is taught as a subject in Government schools, but the following figures from the annual reports of school Medical Officers show that its practical application leaves something to be desired—

| | 1934 | 1935 | 1936 | |
|---|------|-------|-------|------------------|
| Lack of cleanliness (bad or fair) all races | 36% | 34.5% | 35.6% | (Zanzibar only). |

In addition it was observed in 1934 that 60% of the school children suffered from dental diseases directly attributable to dirty mouths; in 1935 the Dental Surgeon reported that the teeth cleaning parade which was instituted in that year to minimize the incidence of dental disease was not being carried out; in 1936 the school Medical Officer reported that there was no evidence that the tooth cleaning parade was being carried out regularly save at two schools—Dole and the Government Central School.

It is apparent that much more will have to be done by rural school teachers if the teaching of hygiene is to become of practical value in the everyday life of the school children.

BY PROPAGANDA AND EXHIBITION.

In September a start was made in placing before the general public information by means of Health Exhibitions. Three were held, one in Zanzibar town, one at the Agricultural Department's Experimental Station at Kizimbani and one in Pemba.

In both Zanzibar exhibitions the same exhibits were shown and all were of a simple nature.

The exhibits were classed as follows:—

(a) *Infant Welfare and Maternity Stall*.—This was conducted by the Lady Medical Officer with assistance from the nursing sisters and helpers from the University Mission to Central Africa. Emphasis was laid on the need for the more intelligent feeding of young children, the necessity of bringing all sick children to hospital for treatment and the importance of the ante-natal treatment of expectant mothers. These points were driven home by periodical lectures, short plays, distribution of pamphlets and demonstrations; that they were appreciated may be deduced from the figures given in Section V where the progress made in women and children's work is discussed.

(b) *Ankylostomiasis and Schistosomiasis*.—Photographs of people suffering from these diseases were shown together with the causative worms. The vectors of both worms were displayed both life size and magnified and some very helpful wax models, borrowed from the museum, showed the results of infections on the intestines and bladder. Alongside these exhibits, methods were demonstrated by which infection could be obviated. Cheap latrines with cement work tops were built on the spot during the exhibitions and portable cement latrine tops, costing Shs. 2-75 each, were sold from the stand. Lectures were given continuously by relays of Sanitary Inspectors and African assistants and there is no doubt that their speeches were taken in. Onlookers were particularly impressed by the Iwan earth borer which dug latrine pits at intervals during the exhibition.

Many printed pamphlets were distributed and evidence has been forthcoming that they have been read and understood.

(c) *Diet*.—One stall, supervised by the Curator of the Museum, was devoted to foodstuffs and realistic demonstrations were given of the shortcomings in the local methods of food preparation. Stress was laid too, by pamphlet and lectures, on the need for enlarging what is regarded in Zanzibar as a normal diet.

It was difficult to deal with hard facts, frequently mentioned by listeners, in regard to the high price of the protective foodstuffs recommended for consumption such as milk, meat, eggs, fresh and animal ghee.

The audiences approved the suggestions put before them, but pointed out that it was poverty and not choice which determined their present dietary. To a large extent this is true and the remedy for the almost universal qualitative undernourishment of the people has yet to be found.

(d) *Malaria and other insect and rat carried diseases*.—Posters were used to a large extent together with models and specimens to demonstrate the diseases commonly spread by mosquitoes, flies, rats, etc. Demonstrations took place at intervals and an endeavour was made to get the people to understand that, whilst under existing rural conditions malaria is inevitable, something can be

done to mitigate the severity and frequency of attacks. Lecturers dwelt upon the purely practical aspects of what could be done by people to help themselves at little or no expense.

Side by side with this exhibit were commercial stalls where cheap mosquito nets, cheap shoes and wire meat safes, in which to store perishable foodstuffs, could be purchased. Numbers of nets and shoes were sold at each exhibition and there is no doubt that the use of mosquito nets as a preventive against malaria, and the taking of small doses of quinine when attacks occur, is now becoming less infrequent amongst the more unsophisticated sections of the populations.

(e) *Housing*.—Models of two standard huts were shown and 4,000 cyclostyled ground plans were distributed. By means of the forceful personality of the demonstrators in this exhibit a great deal of interest was aroused and at both exhibitions the housing stall was thronged continuously. Leaflets setting out the cost of doors, windows and cheap cement were circulated and numbers of these commodities were shown and were purchased. If no sudden improvement can be traced in the housing of Zanzibar island lack of progress cannot be attributed solely to ignorance. But, here again, practical economics play their part in preventing the erection of really solid and durable buildings by the native population.

(f) *Venereal Diseases*.—So far as it was practicable demonstrations and lectures were given on gonorrhœa, syphilis and yaws and it was interesting to find out that gonorrhœa was regarded by numbers of enquirers as a more or less normal condition. Certainly more people have presented themselves for treatment for these diseases since the exhibition and the consumption of arsenicals and bismuth increased during the last three months of the year. Intravenous medication has become so popular that injections are regarded as a cure for all ills.

(g) *Vaccination*.—The need of vaccination was demonstrated and this exhibit has proved in practice to have caused a diminution in the hostility with which vaccinators are commonly regarded in some districts. The number of vaccinations performed in 1936 have increased.

(h) Various other exhibits were shown such as that staged by the dental surgeon, clean milking methods and clean bread production.

(i) Trade exhibits of building material, clean eating houses, rubbish bins, food containers, and cheap crockery were popular and well displayed.

During the exhibition 15,000 leaflets and pamphlets on every subject dealt with were distributed and it may be significant that not one was found thrown away and trodden underfoot.

During the six days of their run it is estimated that the two exhibitions were attended by some 12,000 people, due to no small extent to the campaign of propaganda set on foot by the Provincial Administration. The thanks of the Department are due to the Chief Secretary—then acting as Resident's Deputy—who very kindly opened the exhibition; the keen interest and appreciation displayed by His Highness the Sultan and Prince Abdulla contributed very largely to the success of the exhibitions.

A somewhat similar exhibit was held by the District Medical Officer in Pemba. Lack of funds curtailed the extent of his exhibition but in general it followed the lines of the two described above. It was well patronized and in his annual report the District Medical Officer states that the exhibition brought home to large numbers of people a few elementary facts regarding preventable disease of which they had been ignorant. It is recognized, perhaps more in Zanzibar than elsewhere, that progress along any new line of life is slow at best and undue pressure and haste tends to defeat its own ends—little and often may be regarded as the essential rather than large doses of imperfectly understood propaganda which lead, in the native mind, to the defeatist attitude that it is useless to strive to reach the idealistic levels to which they are exhorted to rise.

In the District.—Throughout the year it has been possible to keep two Asiatic Sanitary Inspectors, one African Health Investigator and two African dispensers continuously employed on sanitation work in the country districts. Primarily they were engaged on a health survey of the areas in which they were stationed, but every advantage was taken to talk to the people and point out how living conditions could be improved chiefly, of course, in the direction of providing latrines, better ventilated houses, purer water supplies, improved methods of rubbish disposal and so forth.

In the Dispensaries.—Dispensers employed in Zanzibar and Pemba were supplied with copies of all pamphlets issued at the exhibitions and they distributed them. They were given written instructions regarding the carrying out of simple public health duties in the areas around their dispensaries. This systematic public health work is new to dispensers and in places their interest in building and water supplies was resented. It is true they were accustomed to carry out public health "inspections" in the past but as they were ignorant of what they were to look for and as no action of any sort was taken as a result of their observations their visitations were not valuable. By the end of the year, however, their visits had come to be looked on with less suspicion and instances have been recorded where their help was asked for and their advice taken. In time—with the help of permanent district Sanitary Inspectors it is probable that this work will become of value.

In General.—Articles have been published by the Zanzibar newspapers for some months during the year and as they were published free a debt of gratitude is due to the newspaper proprietors and the editors of the papers. It is hoped to extend the publication of health articles as they were printed in a variety of languages and the papers have a large circulation. By the end of the year approval had been given, and funds made available, for the publication of small booklets dealing with matters of public health interest. There were in course of printing booklets on malaria, child and maternal welfare and ankylostomiasis, which will be issued early in 1937.

Numbers of lectures and demonstrations on health matters were given from time to time by the District Medical Officer, Pemba, to meetings of mudirs and people.

Conclusions.—Zanzibar is populated by individualists from a large number of tribes and peoples and little tribal organization exists, so that attempts at instruction in public health require a large amount of repetition and individual attention. Whereas tribal meetings can be held elsewhere and matters of public interest presented to large numbers of people, in Zanzibar it is almost necessary to buttonhole the individual and to expound to him what it is wished to teach and even then, owing to the conservatism of the Zanzibar native, much of the effort expended will be wasted.

C. TRAINING OF SANITARY PERSONNEL.

During the year systematic training under this heading was started and the personnel dealt with falls into the following classes.

(a) *Sanitary Inspectors.*—Eleven Sanitary Inspectors are employed but only two of them possess certificates. It was therefore decided to commence a course of training to enable eight of them to sit for the Royal Sanitary Institute Examination, to be held under the regulations prescribed for Tanganyika Territory.

The Sanitary Inspectors' syllabus for the Tanganyika Territory examination is based on a syllabus made out for use in West Africa. Although the Tanganyika Territory syllabus was published in 1933 it has not been possible previously to train candidates for the examination so that the Zanzibar candidates will be the first to sit for the examination in East Africa.

The course laid down is comprehensive and deals with the subjects with which Sanitary Inspectors are required to be familiar in England and the tropics.

So far as can be ascertained from papers set in Jamaica and West Africa the standard to be attained is high in comparison with the level of general education obtaining in Zanzibar. In Zanzibar every common term which is in use in England requires careful definition and preliminary lectures are required on each subject before any real teaching can take place.

The course is proving of great interest to pupils and teachers and both are keen. Considerable help has been given in training by various other departments, particularly the Agricultural and Public Works.

The course will continue during 1937 as the Royal Sanitary Institute have agreed to the certificate examination being held in Tanganyika Territory towards the end of that year.

(b) *Rural Dispensers*.—A class for the training of men to fill vacancies in the district dispensaries was started in August and, although primarily they must be taught simple medicine and treatment methods, an attempt has been made to inculcate the preventive outlook. These men go through the hospital wards for 3-6 months each, are lectured regularly, taught hygiene and a few of the simple duties of a Sanitary Inspector and are examined in their progress periodically.

(c) *General*.—Groups of porters, mosquito searchers and menial grade employees are encouraged to attend night school, and they do so, with the idea that in time they will learn enough to merit promotion within the department.

SECTION IV.

PORT HEALTH WORK AND ADMINISTRATION.

During the year 563 ships and 582 dhows visited Zanzibar, 13,590 immigrants landed and 13,858 emigrants embarked.

The duties of Port Health Officer reverted to the Medical Officer of Health for the greater part of the year and he was assisted in his work by the better functioning of the 1935 rules for the granting of automatic pratique. The system now appears to be understood by most of the shipping firms and works reasonably smoothly, to the mutual benefit of the shipping companies and the Port Health Officer.

No cases of infectious disease were imported during the year and no ships or passengers were placed in quarantine.

Automatic free pratique was suspended for a few weeks in respect of ships coming from certain east coast ports infected with small-pox and crews and passengers were inspected as a routine on arrival—no cases were discovered.

As heretofore all dhows were visited by a Sanitary Inspector and passengers and crews were vaccinated before being allowed to land, unless there were obvious reasons to the contrary.

With the present intelligence system in force it is found that bills of health are obsolete by the time ships arrive at Zanzibar so that, in conformity with other East African ports, bills of health ceased to be inspected; if required by departing vessels they were issued free of charge.

Quarantine Island.—This island was not required for use as a quarantine station during the year and advantage was taken of its being vacant to have all the buildings put into a proper state of repair.

The boiler tubes of the Washington Lyons disinfector on the island proved to be corroded beyond repair and new tubes were ordered.

The island was maintained in good order with a reduced staff during the year.

Aeroplane traffic assumed larger proportions during the year. As all the passengers were either in transit or had come from one or other of the east coast territories no medical inspections were carried out.

SECTION V.

MATERNITY AND CHILD WELFARE.

There are many practical difficulties in the way of the sanitarian in Zanzibar and mention need only be made of the intense conservativeness of the people, lack of tribal organization and the superstitious faith in witch doctors. In view of this it was decided to concentrate the activities of the department on those types of work most calculated to yield results commensurate with the efforts expended; special attention, therefore, was paid to the medical inspection and treatment of school children and to maternity and child welfare work. To embark on a serious attempt to cope with the enormous amount of disability which exists amongst the women and children of Zanzibar it was found necessary to engage a Lady Medical Officer, the first who has practiced in Zanzibar. She arrived in Zanzibar in June and started a special womens' clinic at once. By October she was established in a building separated from, but beside, the existing hospital and devoted entirely to the treatment of women and children and staffed entirely by women. In addition to the Lady Medical Officer the staff includes a European Sister, who recently attended a course in Health Visiting, a qualified Goan midwife, two African semi-trained nurses, one female clerk and one female learner dispenser. Regular voluntary assistance in the clinic was given daily by European ladies. Daily clinics are held from 8 a.m. till 1 p.m. for women and children, including boys up to five years of age; they are appreciated and the daily attendance figures have risen from 45 to 130 since the arrival of the Lady Medical Officer.

Possibly more important are the special clinics which are conducted in the afternoon from two to four. Infant welfare clinics are held twice weekly and are well attended. The ante-natal clinic is open weekly and the numbers attending it are slowly but steadily increasing. The genito-urinary weekly clinic is also well attended and most of the work done is in connexion with venereal infection—gonorrhœa with its sequelæ and complications being the most common condition seen; many cases of syphilis are also treated at this clinic. All these activities are new ventures and the response accorded to them during the few weeks they have been in existence is so encouraging that, already, tentative plans have been made for extending the scope of the work.

Special clinics for women were started towards the end of the year in one rural dispensary and in a dispensary attached to the police lines in Zanzibar. The latter was well attended by children.

At the rural dispensary—Selem—the initial attendances were poor but are now increasing and may reach quite large numbers in time.

It was apparent by the end of the year that women and children's work was capable of a great deal of expansion and should be extended to embrace Pemba and the rural areas in both islands. To undertake this more staff is necessary and one qualified Indian woman is to be engaged to act as an Sub-Assistant Surgeon under the direction of the Lady Medical Officer. Such an appointment will free the Lady Medical Officer from the more unimportant details of routine work and will enable her to start and supervise work over a much larger area than can now be dealt with.

In addition to the purely institutional work carried out at the hospital the Lady Medical Officer commenced a systematic medical examination of the pupils in the local girls' school. This is the first time it has been done, and although only the preliminaries had been completed by the end of the year sufficient experience was gained to enable a few general remarks on the health of the children to be made in Section III.

Amongst women, gonorrhœa, mostly old established, was common, syphilis occurred frequently and the more general diseases such as malaria, ankylostomiasis and dental caries occurred in much the same proportion as amongst the men.

ZANZIBAR MATERNITY ASSOCIATION.

The work of this association followed the lines detailed in the report for the year 1935 and a work carried out is summarized in the following table:—

| | | Live births. | Still births. | Miscar- riages. | Total women treated. | Infants born alive single. | Twins. | Total. | Infantile Deaths. |
|--------------------|-----|-----------------|------------------|--------------------|----------------------------|----------------------------------|--------|--------|----------------------|
| Ithnasheri Khojas | ... | 76 | 8 | 13 | 97 | 76 | — | 76 | 2 |
| Bohoras | ... | 48 | 6 | 3 | 57 | 48 | — | 48 | — |
| Hindus and Bhatias | ... | 43 | 1 | 4 | 48 | 43 | — | 43 | — |
| Other Indians* | ... | 50 | 4 | 1 | 55 | 50 | — | 50 | — |
| Total Indians | ... | 217 | 19 | 21 | 257 | 217 | — | 217 | 2 |
| Arabs | ... | 54 | 5 | — | 59 | 53 | 2 | 55 | 2 |
| Comorians | ... | 20 | 5 | — | 25 | 19 | 2 | 21 | 1 |
| Total Arabs | ... | 74 | 10 | — | 84 | 72 | 4 | 76 | 3 |
| Africans | ... | 114 | 10 | 10 | 134 | 110 | 7 | 117 | 2 |
| Total all Races | ... | 405 | 39 | 31 | 475 | 399 | 11 | 410 | 7 |

*Includes 28 Sunnis, 12 Goans and 7 Ismailia Khojas.

There were no Maternal deaths during the year.

In addition, at the dispensary conducted at the Mwembeladu Maternity Home, 7,962 cases of various sorts were treated; the more serious were referred to the Zanzibar hospital.

Ante-natal re-attendances numbered 2,016 and post-natal attendances reached the total of 2,729. Although any assistance required was freely given by the Lady Medical Officer the above figures are not included in the official returns of the department as the Maternity Association—although to some extent dependant on Government grants for its existence—is the responsibility of a committee comprising all sections of the community.

SECTION VI.

HOSPITALS AND DISPENSARIES.

In the following tables A and B details of the work carried out at the various Government hospitals and dispensaries are tabulated.

TABLE A.

Medical Units, Beds and Patients by Districts.

| MEDICAL UNITS. | Zanzibar Island. | | Pemba Island. | | Total. |
|------------------------------|------------------|-----------|---------------|-----------|--------|
| | Zanzibar Town. | District. | Towns. | District. | |
| European Hospital | ... | 1 | — | — | 1 |
| Asiatic and African Hospital | ... | 1 | 3 | — | 4 |
| Police Lines | ... | 1 | — | — | 1 |
| Prison Infirmary | ... | 1 | — | — | 1 |
| Infectious Disease Hospital | ... | 1 | — | — | 1 |
| Walezo Poor House | ... | — | 1 | — | 1 |
| Makendeni leper colony | ... | — | — | 1 | 1 |
| Sub-Dispensaries | ... | 2 | 13 | 7 | 22 |
| Mental Hospital | ... | 1 | — | — | 1 |
| Eye Clinic | ... | 1 | — | — | 1 |
| School Clinic | ... | 1 | — | — | 1 |
| Walezo leper colony | ... | — | 1 | — | 1 |

IN-PATIENTS.

Beds available:

| | | | | | |
|---------------------------------|-----|---------------------|---------------------|-----|---------------------|
| European | ... | 14 | — | — | 14 |
| Asiatic and African in Hospital | ... | (¹)96 | — | 108 | 204 |
| Africans in Institutions | ... | (²)81 | (²)192 | — | (²)273 |
| Total | ... | (²)191 | (²)192 | 108 | (²)491 |

Cases admitted:

| | | | | | |
|----------------------------------|-----|-------|-----|-------|-------|
| European | ... | 71 | — | — | 71 |
| Asiatic and Africans in Hospital | ... | 1,967 | 436 | 1,614 | 4,017 |
| Africans in Sub-Dispensaries | ... | — | 110 | — | 110 |
| Total | ... | 2,038 | 546 | 1,614 | 4,198 |

OUT-PATIENT ATTENDANCES.

| | | | | | | |
|------------------|-----|---------|---------|--------|--------|---------|
| Hospitals | ... | 100,211 | 46,938 | 88,979 | — | 236,128 |
| Sub-Dispensaries | ... | 59,709 | 102,395 | — | 60,938 | 223,042 |
| Total | ... | 159,920 | 149,338 | 88,979 | 60,938 | 459,170 |

NEW CASES.

| | | | | | | |
|-----------------------------------|-----|--------|--------|--------|--------|---------|
| European | ... | 312 | — | — | — | 312 |
| Asiatic and Africans in Hospitals | ... | 22,234 | 11,521 | 28,883 | — | 62,638 |
| Africans in Sub-Dispensaries | ... | 12,388 | 36,668 | — | 16,229 | 65,285 |
| | ... | 34,934 | 48,189 | 28,883 | 16,229 | 128,235 |

(¹) 20 extra temporary beds are in use on the verandah of the Zanzibar Native Hospital.

(²) This includes the Mental Hospital, Poor House, Leper Colony and Isolation Camp—none of the beds are therefore "hospital" beds in the strict sense of the word and their occupants are not really "in-patients".

TABLE B.

List of Sub-Dispensaries.

ZANZIBAR DISTRICT.

| Name. | | New cases. | Attendances. |
|---------------|-----|------------|--------------|
| School Clinic | ... | 3,342 | 9,593 |
| Mkokotoni | ... | 4,136 | 11,828 |
| Seleni | ... | 3,400 | 12,963 |
| Makunduchi | ... | 4,246 | 12,810 |
| Mahonda | ... | 754 | 2,015 |
| Mwera | ... | 3,541 | 7,116 |
| Chaani | ... | 2,104 | 6,613 |
| Uzini | ... | 1,668 | 6,518 |
| Kizimbani | ... | 2,015 | 5,425 |
| Bububu | ... | 2,020 | 7,729 |
| Bweleo | ... | 2,103 | 6,188 |
| Kizimkazi | ... | 1,565 | 4,290 |
| Mangapwani | ... | 1,575 | 4,147 |
| Chwaka | ... | 2,115 | 7,902 |
| Tunguu | ... | 1,629 | 4,797 |
| Mbiji | ... | 3,042 | 9,487 |
| Travelling | ... | 7,872 | 14,896 |
| Mwembeladu | ... | 7,962 | 39,931 |
| Ndijani | ... | 402 | 1,423 |
| Mkwajuni | ... | 25 | 39 |

PEMBA DISTRICT

| | | | |
|-------------|-----|-------|--------|
| Mzambaraoni | ... | 2,063 | 9,878 |
| Mtangatwani | ... | 1,771 | 7,513 |
| Kinazini | ... | 2,055 | 8,200 |
| Stambuli | ... | 1,761 | 3,493 |
| Ole | ... | 1,704 | 8,165 |
| Kengeja | ... | 4,011 | 13,340 |
| Kangani | ... | 2,856 | 10,349 |

SECTION VII.

REPORT ON PRISONS AND ASYLUMS FOR 1936.

A. PRISONS.

The details relating to each prison were as follows:—

| | Daily average in Prison | Daily average on sick list. | Deaths. | Morbidity rate. | Death rate. |
|--------------------|----------------------------|--------------------------------|---------|--------------------|----------------|
| Central Prison | ... 132.5 | 8.35 | Nil | 63 | Nil |
| Wete, Pemba | ... 27.4 | 6.29 | „ | — | „ |
| Chake Chake, Pemba | ... 13.2 | 1.42 | „ | — | „ |

Health of Prisoners.

I. ZANZIBAR CENTRAL PRISON.

The health of the prisoners in the Central Prison was remarkably good, and the morbidity rate of 63 compares favourably with 181 in 1934 and 154 in 1935; admissions to hospital during the year totalled only 48. There were no deaths and no serious outbreaks of epidemic disease. The diseases encountered were syphilis (110 cases) intestinal parasites (106 cases) gonorrhœa (70 cases) malaria (54 cases), together with the usual tale of minor abrasions, constipation, coughs and colds.

The reason for the increase in the numbers of cases of syphilis, intestinal parasites and gonorrhœa was the more rigid application of the system of examining all prisoners on admission and the collecting of bloods, stools, sputums, etc. as a routine. The following table shows the laboratory reports on the specimens submitted:—

| | Positive. | Negative. | Doubtful. |
|---------------------------------|-----------|-----------|-----------|
| Kahn Test | ... 73 | 78 | 24 |
| Blood for M.P. | ... 49 | 71 | — |
| Stools for dysentery | ... 3 | 16 | — |
| Smears for G.C.C. | ... 17 | 50 | — |
| Urine for Bilharzia | ... 4 | 1 | — |
| Sputum for T.B. | ... 1 | 8 | — |
| Stools for intestinal parasites | ... 66 | 32 | — |
| Smears for B. Lepræ | ... — | 1 | — |
| Skin Clip for B. Lepræ | ... — | 1 | — |
| Smear for spirochætes | ... — | 1 | — |

The discrepancy between these positive findings and the chief diseases treated is due to the fact that some prisoners under treatment in 1935 continued into 1936 and certain conditions, such as acute gonorrhœa, did not require laboratory investigation.

II. PEMBA PRISONS.

In Chake Chake the health of prisoners was good, but at Wete the numbers on the sick list were large—an average daily attendance of 6 out of 27 prisoners. This was due to the fact that the prisoners were mostly short term, and the prison population changed so rapidly that the numbers under treatment for intestinal parasites, syphilis and worms appears out of proportion to the average number of prisoners in jail.

Prison Diet and Avitaminosis.—The improved diets introduced in August 1935 was continued during the year and the following report by the Medical Officer who examined all the prisoners in April 1935 and in March and December 1936, speaks for itself.

“It is becoming increasingly difficult to diagnose avitaminosis on account of the mildness of the signs and symptoms. The beri-beri factor (Swahili=*Ganzi*) characterized by neuritic pains in the legs has been eliminated; night blindness (Swahili=*Giza*) does not exist now; the only signs in any way suggestive of avitaminosis are the yellow staining and muddy appearance of the conjunctiva which, although unsightly, does not appear to be associated with ill health. It is debatable if, in fact, these signs warrant the diagnosis being made and in the nine positive cases mentioned in the following table this was the only sign of avitaminosis. Three of the nine were old offenders who had showed severe signs of the trouble in the past and six were new admissions unaffected by prison diet.

Percentage of African prisoners showing signs of avitaminosis.

| | April 1935. | March 1936. | December 1936. |
|------------------------------------|------------------|-------------------|-------------------|
| Prisoners under six months in jail | 25% (9 in 36) | 39% (18 in 46) | 13% (6 in 46) |
| Over six months and under one year | 53% (7 in 13) | 18% (5 in 27) | Nil. (0 in 13) |
| Over one year | 37% (9 in 24) | 12% (3 in 25) | 10% (3 in 29) |

The numbers are so small that the percentages quoted are deceptive and possibly the totals of those examined on each occasion reflect the positive more accurately:—

April 1935, 25 out of 73 prisoners had avitaminosis 34%
 March 1936, 26 out of 98 prisoners had avitaminosis 26%
 December 1936, 9 out of 88 prisoners had avitaminosis 10%

The numbers of prisoners on the Asiatic diet scale were so small as to invalidate any calculation of percentages, but the figures were:—

April 1935, 9 out of 13 showed signs of avitaminosis
 March 1936, 3 out of 12 showed signs of avitaminosis
 December 1936, 4 out of 20 showed signs of avitaminosis

Of the four showing signs, three were Hindus who do not eat fresh meat. Their symptoms were extremely mild and they were able to work and made no complaints of ill health.

The findings of this final survey indicate that, as a practical entity having an adverse affect on the health of the prisoners avitaminosis no longer exists. The diet is satisfactory and prisoners all look fit, and gain and maintain weight.

Sanitation.—Water supplies have been improved, but occasionally in Zanzibar the supply failed; no serious consequences resulted though it may be significant that three cases of bacillary dysentery occurred during one of these periods of failure of supply.

Ventilation and cubic space available for each prisoner are adequate.

Scavenging was satisfactory on the whole, but periodically flies were a nuisance and were usually found breeding in refuse which had been buried inadequately. The nuisance was never serious and ceased when the breeding places were discovered.

B. MENTAL HOSPITAL.

Details of admissions, discharges and deaths during 1936 were as follows:—

| | Males. | Females. | Total. |
|---------------------------------------|--------|----------|--------|
| Number of inmates 31st December, 1935 | 30 | 16 | 46 |
| Admitted during 1936 | 7 | 6 | 13 |
| Died during 1936 | 1 | 1 | 2 |
| Discharged during 1936 | 8 | 5 | 13 |
| Remaining on 31st December, 1936 | 28 | 16 | 44 |

The two deaths were due to Nephritis (1) and General Paralysis of the Insane (1), both complicated by extreme debility.

The types of insanity prevailing at the end of the year were:—

| | Males. | Females. | Total. |
|-----------------|--------|----------|--------|
| Mania | 11 | 8 | 19 |
| Melancholia | 9 | 4 | 13 |
| Dementia | 5 | 2 | 7 |
| Dementia Præcox | 1 | 2 | 3 |
| Paranoia | 1 | — | 1 |
| G.P.I. | 1 | — | 1 |

As stated each year the above labels are not to be regarded as scientifically correct. The multitude of languages spoken by the patients and the primitive mentality of those who are employed to interpret the more unusual tongues, make it necessary to say that the diagnoses are as nearly correct as a medical officer—not specially trained in mental work—can hope to achieve.

The Health of the Patients.—The routine examination of the bloods and stools of new admissions was continued during the year and 46% gave a positive Kahn reaction as against 50% in 1935. Intestinal parasites, mainly ankylostomes, were present in 80% of the stools. Treatment was given for these conditions and courses of anti-syphilitic treatment commenced last year were completed. No psychological treatment was attempted; apart from the treatment of syphilis and intestinal parasites, and a few cases of gonorrhœa, the sick list was negligible. Other illnesses were confined to half a dozen cases of influenza, a few cases of malaria and minor injuries. In general the health of the patients was excellent and all either put on weight or failed to lose any.

Diet.—The diet scales introduced in 1935 were continued without modification and there is no doubt that they contributed to the general well-being of the patients, which is reflected in the discharge of 13 people as against one in 1935 and eight in 1934.

Sanitation.—At times some difficulty was experienced over the irregular water supply to the latrines, but on the whole it was satisfactory.

The premises were kept very clean and on no occasion was any irregularity discovered either at routine or surprise visits. Credit for this admirable state of affairs is due to the Superintendent of Prisons (who is responsible for the supervision of the mental hospital) and the staff, who are remarkable for their patience and kindness to the patients.

Accommodation.—Towards the middle of the year there was some rather serious overcrowding due, not so much to larger numbers, but because two cells were being occupied by violent maniacs and a third and fourth were reserved for sick males and females. The situation was met by the transfer of one extra block of the prison to the mental hospital. This comprised eight extra cells and 18,000 square feet of grass covered lawn, in the centre of which is a sun shelter; three extra flushing latrines were included and a communal bathroom. As a result of this and the re-organization of the hospital the 16 women have eight large cells, a large cemented airing court, with a new sun shelter in it, and about an acre of garden. The 28 men have 14 large cells, one sick bay, two cemented airing courts and the above mentioned newly added lawn and sun shelter. The accommodation is now fairly satisfactory.

Occupation.—As in 1935 the female patients were engaged largely in preparing and cooking food for themselves and the men. It is slow work as a good deal of peeling of potatoes, cassava and preparation of coconuts is involved and no knives are permitted. With this and general cleaning, washing and mat making the women are fully occupied except for the few hours each day which they spend sitting about in their garden.

The men are more difficult to employ. The prison staff are reluctant to let them work outside the mental hospital and, in fact, few would willingly do so. Their relaxations are confined, therefore, to playing various native games, rope making, cap sewing, washing and cleaning and smoking. Fortunately the African—and most of the patients are Africans—has an apparently inexhaustible capacity for doing nothing for hours on end.

C. WALEZO INFIRMARY FOR THE POOR.

The figures for 1936 regarding the inmates of the infirmary were:—

| | Males. | Females. | Total. |
|----------------------------------|--------|----------|--------|
| Remaining on 31st December, 1935 | 119 | 49 | 168 |
| Admitted during 1936 | 261 | 73 | 334 |
| Discharged during 1936 | 207 | 49 | 256 |
| Died during 1936 | 94 | 41 | 135 |
| Remaining on 31st December, 1936 | 79 | 32 | 111 |

As for many years past Sister Friedeberta of the Roman Catholic Mission aided by her assistant, Sister Renolda, managed the Walezo institutions in her usual kindly and efficient way. During the year some re-arrangement of the accommodation took place and one building in semi-permanent materials was completed. The result was that whilst the total accommodation was reduced by 8 beds a very necessary hospital ward of 12 beds was made available. The out-patient dispensary remained very popular and the new out-patients numbered 4,276 as against 4,155 dealt with the previous year. The daily average attendance of new and old cases was 70.

This dispensary serves the surrounding country people who are often so overawed by the larger town hospital that otherwise they would never present themselves for treatment.

The principal causes of death during the year were senility, pneumonia, ankylostomiasis and chronic nephritis.

D. WALEZO TUBERCULOSIS ASYLUM.

The year's figures for this institution were:—

| | Males. | Females. | Total. |
|----------------------------------|--------|----------|--------|
| Remaining on 31st December, 1935 | 16 | — | 16 |
| Admitted during 1936 | 75 | 3 | 78 |
| Discharged during 1936 | 32 | — | 32 |
| Died during 1936 | 34 | 2 | 36 |
| Remaining on 31st December, 1936 | 25 | 1 | 26 |

As may be gathered from the above statistics this asylum provides a place for tuberculosis patients to die rather than one where they can be cured. The reason is that, as elsewhere, tuberculosis patients are optimistic and this disease, lacking the signs and symptoms of what the local people consider to be real sickness, ulcers the size of soup plates, irreducible hernias, etc. is thought little of, and, so long as the patient can walk and is not coughing up much blood, assistance is rarely sought. Even when taken to Walezo patients cannot be made to understand that the well-being experienced after two or three weeks treatment and rest is not a cure and they demand their discharge, only to return and die a few months later.

The repatriation of natives of Tanganyika and Kenya Colony accounted for some of the discharges, but there were no cases discharged cured.

E. WALEZO LEPER SETTLEMENT.

The details for the year were:—

| | Males. | Females. | Total. |
|----------------------------------|--------|----------|--------|
| Remaining on 31st December, 1935 | 23 | 16 | 39 |
| Admitted | 15 | 8 | 23 |
| Discharged | — | 1 | 1 |
| Died | 6 | 3 | 9 |
| Remaining on 31st December, 1936 | 32 | 20 | 52 |

Funzi Island Leper Settlement was abandoned early in the year and the remaining Zanzibar lepers were transferred to Walezo. Considerable building had to be undertaken to house these new admissions as it was decided that every single leper should be given a hut and, although each "hut" was in effect

only a small room, this involved the digging of latrines and the enclosing of the indispensable little compounds behind each house. All the huts were built in the native style with adequate roof ventilation and were provided with doors and windows and whitewashed. Married couples were given a double hut.

A feature of the layout of the colony was that patients were allowed to choose sites for their own huts and to cultivate around them in the native way. The result—at first—was distressing to eyes accustomed to institutions where buildings were “lined up” in streets and roads but, after 10 months, it is to be admitted that the whitewashed huts set in green gardens and dotted about under the coconut palms are picturesque and what is more they are very popular with the people who have to live in them.

Administrative buildings were put up in permanent material by the Public Works Department and comprise a two roomed ward, with two beds in each room, an out-patient treatment room, with a large waiting verandah, a large food store, a shop (run by the lepers) and a small market which is stocked daily with fresh food. In addition a semi-permanent “club” or common recreation room was built, a Mosque and a Protestant Church.

A good well was dug and a pump was fitted and all adjacent swamps were drained and will be planted with crops.

No routine anti-leprosy treatment is given as the officers concerned with the leper colony are not convinced that any is effective, especially in the advanced cases that are common in Zanzibar. Instead, any other condition requiring treatment—usually syphilis and worms—receives attention. So far as arresting the course of the disease is concerned reliance is placed on good feeding and healthy surroundings, combined with a free life devoted to the cultivation of individual plots whose produce can be sold.

The colony is popular and almost all the new cases applied voluntarily for admission and there have been no cases of desertion. There was one discharge only, and for the reason given last year—most cases are advanced before they are seen—it is not to be expected that many will ever be discharged; even the burnt out cases are not welcomed in the outside world by their relations.

F. MAKONDENI LEPER COLONY.

With the abolition of Funzi Island Leper Settlement, for the reasons given in the 1935 report, it became necessary to establish an alternative colony for the use of the Pemba lepers. It was decided therefore to utilize an Agricultural Department estate Makondeni—situated $4\frac{1}{2}$ miles from Wete township.

This new site is on high ground which is well drained and provided with adequate water supplies and appears ideal in every way for a leper colony as the Government ground on which it stands is extensive and fringed with plantations; no people reside in close proximity to the settlement.

A start was made in erecting the new houses required in January and the native type was adhered to, with the modification that corrugated iron roofs were supplied and cement floors laid. Although built somewhat hurriedly most of the houses appear to be wearing fairly well and are weather proof. At the same time communal buildings were built by the Public Works Department and are similar to those which have been described in connexion with Walezo Leper Colony. In all 47 houses—sufficient to house 60 lepers—have been built and 57 lepers are in occupation.

As at Walezo the lepers are provided with as much ground as they wish to use for cultivation and are allowed to dispose of the produce. In this way they have opportunities of supplementing their rations.

The colony has been under the control of the two medical officers, who are stationed at Wete, and is administered by a nursing sister who lives in Wete and formerly visited the colony daily; such frequent visits are now considered unnecessary and have been cut down to three a week.

There is also a resident dispenser who treats all minor illnesses and assists with the issue of stores and general supervision. The District Commissioner takes an active interest in the estate and has appointed one leper to be the Sheha, or Chief, of the lepers. Under his direction the colony has passed successfully through the difficult time of settling into a completely new environment.

It is gratifying to record that the lepers appreciate their new home and are slowly interesting themselves in cultivation. They remain remarkably well—apart from their disabilities due to leprosy—and are as contented and happy as it is possible for such unfortunate people to be. In this connexion it is of interest to record the fact that old “burnt out” cases, previously paroled from Funzi have presented themselves and asked to be allowed to live at Makondeni. In nearly all the cases this request was granted. In addition, five new cases of early leprosy appeared at the hospital and asked to be taken to Makondeni and treated. It seems that the policy now followed in Pemba and Zanzibar of making leper colonies sufficiently popular to attract voluntarily early cases of leprosy is likely to be successful. The Leprosy Decree which made leprosy almost an offence and was unworkable in practice is to be repealed so as to abolish all suggestion of compulsion in dealing with lepers.

Specific treatment by injections of Alepol has been given in some of the earlier cases and trichloracetic acid was used as a paint for the earlier macular lesions; but the signs and symptoms of the largest number were improved by general medical measures combined with good feeding and treatment of concurrent ailments. No discharges took place, as “arrested” cases did not wish to go as they are not popular amongst their own people.

The figures relating to Makondeni for 1936 were:—

| | Males. | Females. | Total. |
|---|--------|----------|--------|
| Numbers of lepers transferred from Funzi Island | 34 | 19 | 53 |
| Cases admitted in 1936 | 10 | 2 | 12 |
| Number of deaths | 6 | 2 | 8 |
| Number discharged | — | — | — |
| Number remaining on 31st December, 1936 | 38 | 19 | 57 |

SECTION VIII.

METEOROLOGY.

All available information is printed in the Blue Book for the Protectorate.

SECTION IX.

(A) ANNUAL REPORT OF THE PATHOLOGICAL LABORATORY.**1. ZANZIBAR.**

Staff.—From March until the middle of December the Pathologist was absent on leave in England, during which period the Senior Laboratory Assistant was in charge.

On March 1st a young Indian was appointed as a Learner, and has proved satisfactory so far as it has been possible to train him, for owing to pressure of work it has been necessary for him to undertake the clerical work, which has been considerable.

Building and Equipment.—The petrol gas plant, which is shared with the Government Chemist, was installed at the beginning of the year, and was in use in early March. It has proved to be a very great convenience, and owing to the hotter flame much time is saved. As, however, the pressure is low, it is still necessary to use paraffin lamps for the large autoclave, hot air sterilizer and blowpipe.

General Remarks.—There was a marked increase in the number of specimens examined in the laboratory during the year, the total number being 21,484, an increase by 6,056 over the previous year. This was due mainly to larger numbers of specimens for the Kahn Test, malaria diagnosis and of urine for presence of Schistosoma ova in connexion with special investigation of school children by the School Medical Officer. Slides for diagnosis of gonorrhœa were nearly double those of last year. In other sections there was also an increase, except in histology and medico-legal work.

Specimens received from Pemba were 54 blood sera for the Kahn test, and two stools for isolation of dysentery bacilli. A fair amount of material was sent by private medical practitioners, the revenue derived from this source being Shs. 202-50 for the year, a decrease of Shs. 54 compared with the previous year.

The work of the laboratory is reported under the following headings:—

- | | |
|-------------------------------|------------------|
| A. Parasitology | F. Public Health |
| B. Serology | G. Histology |
| C. Bacteriology | H. Autopsies |
| D. Biochemistry | I. Medico-legal |
| E. General Clinical Pathology | |

(A) PARASITOLOGY.**(1) BLOOD FILMS.**

Malaria.—There was a considerable increase in the number of slides examined, the total, 8,643, being greater by 2,196 than in the previous year. The percentage of positive films was 29.3, compared with 21.5 last year. This was due to the very high proportion of positives in blood films from school children. Fifteen crescents were found in 1,006 positive Subtertian films, this being about the usual proportion.

An unusual feature was the great rise in positive Quartan films, for whereas there were only nine in 1935, this year there were forty-nine.

Classed as “undefined plasmodia” are those parasites which could not be assigned to a definite species, usually because the ring forms were so small that accurate determination was impossible.

Fewer microfilaria were found in the course of examination of slides for malaria both actually and relatively, the figures being 36 this year as against 55 in a smaller number of slides in 1935, or 0.4 per cent compared with 0.8 per cent.

Relapsing fever spirochaetes were found in one slide sent for suspected malaria.

(2) FÆCES.

The total number examined, 3,966, was higher by 522 than in 1935.

Among the helminth ova *Ankylostoma* predominated as usual, but the percentage of positives was lower than last year, being 40.01 per cent this year and 47.8 per cent in 1935, even though as a routine every stool not showing ova in direct smears was treated by a concentration method.

The proportion of other helminth ova was much the same as in former years. The finding of five onchospheres of *Tænia saginata* is not unusual, the number recorded annually in previous years varying from one to seven.

There was a definite increase in the number of infections due to *Entamoeba histolytica*, this parasite being undoubtedly present in eight separate cases, in addition to two other cases of clinical dysentery in which laboratory diagnosis of cysts could not be made with certainty.

No *Amoeba* was diagnosed as *E. histolytica* unless the free forms, if present, showed the general characters of this parasite and contained ingested red blood corpuscles, or alternatively, typical four nucleated cysts were present.

It has unfortunately not been possible to ascertain the probable source of infection in these cases, a matter of some importance, as hitherto amoebic infection has occurred only in persons who have resided previously in a country where it is endemic, and where presumably they became infected; for enquiry seems to have established that this infection has not yet been recorded in a person who has never left Zanzibar Protectorate. Every effort will be made to obtain the fullest information in 1937 on this point.

(3) URINE.

The examination of urine for *Schistosoma hæmatobium* infections from children attending district schools accounted largely for the increase under this heading, the number being 518 compared with 183 in 1935, while the positive findings were only 24.3 per cent against 61.7 last year, as might be expected in the circumstances.

(B) SEROLOGY.

(1) SYPHILIS AND YAWS.

The Kahn test continued to be used exclusively, the Wassermann reaction being done only when specially requested, which was only once last year.

Owing to the examination of school children in district schools, in addition to routine diagnostic tests the total number of Kahn tests was 3,724, or 2,231 more than last year, the positives being 22.1 per cent.

Only three specimens of cerebro-spinal fluid were submitted for this test.

From Medical Officers in Pemba a total of 54 sera were received, distributed as follows:—

| | |
|------------------|-------------------------------|
| From Chake Chake | 28, of which 9 were positive. |
| From Mkoani | 5, of which 0 were positive. |
| From Wete | 21, of which 6 were positive. |

(2) ENTERIC GROUP.

A rather larger number of agglutination tests for *Bact. typhosum* were positive this year, 30 being positive out of 89 tests. Two sera were positive to *Salmonella* group one of them from an African from whose stools a *Salmonella* organism was isolated (see Section (c) Bacteriology (3)).

(C) BACTERIOLOGY.

(1) BLOOD.

Of 34 blood cultures, pathogenic organisms were isolated from ten.

(2) URINE

Bact. typhosum was grown in one specimen out of thirty submitted from cases of Enteric fever.

Microscopical examination of one specimen for Leptospira was negative.

(3) FÆCES.

Cultures were made in 125 cases of suspected bacillary dysentery resulting in the isolation of

| | | |
|------------------------|-----|----|
| B. dysenteriae Flexner | ... | 19 |
| .. Sonne | ... | 4 |

Fifteen Flexner organisms were typed by the Senior Laboratory Assistant, giving the following types and mixtures of types, V, W, X, Y, VX, VXZ and XZ.

It is of special interest to record that from a dysenteric stool an organism of Salmonella type was isolated, this being the first occasion on which the actual organism has been obtained in culture, though, as recorded in the 1935 Laboratory Report, evidence has been obtained previously that infections by this group are comparatively common in Zanzibar. The blood of the patient agglutinated his own organism, as well as stock Salmonella group suspension, to full titre, but did not agglutinate specific B. Aertryke or Gærtner in any dilution.

This bacillus has been tested for agglutination against sera of Salmonella moscow and McNee types, with which it agglutinates strongly, and a culture is being sent to the Veterinary Laboratory Kabete, where greater facilities exist for accurate typing of this organism.

Cultures were made from 77 stools for presence of Bact. typhosum, with three positive findings.

The fæces of a fowl were cultured at the request of the Agricultural Department for presence of the Bacillus of fowl cholera, with negative result.

(4) SPUTUM.

The number of sputa received for examination for M. tuberculosis was 574 an increase of 44 over last year's total. The percentage of positive findings was almost exactly the same as in 1935, that is 29.6 per cent in comparison with 29.8 per cent last year.

(5) PUS.

The increase in smears for diagnosis of gonorrhœa noted last year was maintained and considerably extended, for 818 such smears were examined compared with 498 in 1935.

The majority were urethral and prostatic smears, but eight were conjunctival, and two from the cervix uteri.

Ten specimens of pus from abscesses were received from the Native Hospital.

Scrapings from a sore on the face of a child recently arrived from India contained numerous Leishman donovan bodies.

(6) THROAT SWABS.

There was no case of diphtheria diagnosed in the laboratory, but fifty-three swabs were examined and all were negative.

A swab was also sent from a case of suspected Anthrax, but was negative.

(7) NASAL SMEARS FOR *M. LEPRÆ*.

Nasal smears totalled 53, of which 13 were positive.

No skin smears were submitted for examination.

(8) PATHOLOGICAL FLUIDS.

The only comment called for is to note the very small success in finding *Spironema pallidum* in chancre juice. The technique employed to obtain the juice is that in common use every-where, and the juice is examined by dark-ground illumination and by Fontana's method in every case, and usually by Burri's method also.

It can only be supposed that the chancres have been treated with antiseptics before reporting to the laboratory in spite of instructions to the contrary. The matter will be investigated further in 1937.

(9) MISCELLANEOUS.

Under this heading are included four examinations of skin scrapings for fungus, five specimens of discharge from the gums, examinations of semen for living spermatozoa, and five cultures made for the Dental Surgeon.

(10) VACCINES.

Ten Autogenous vaccines were prepared, and 1,515 c.c. of *Gonococcus* Vaccine made from local strains were issued to the hospitals.

Also 2,000 c.c. of Besredka's anti-virus broth were prepared.

(D) BIOCHEMISTRY.

Tolerance tests comprised five for Glucose tolerance, and one for Lævulose tolerance.

Blood sugar tests totalled 361, slightly more than last year when 333 were done.

Blood urea tests were only required in 15 cases, compared with 41 last year.

Other tests call for no comment.

(E) GENERAL CLINICAL PATHOLOGY.

There is nothing of special interest to record in this section. It is observed that there was a marked increase in the number of specimens of urine for general examination i.e. routine testing, which should be carried out in the wards.

(F) PUBLIC HEALTH.

Water.—The total number of water samples examined was 128, most of which were routine monthly samples of the Town water supplies.

In addition, four separate samples of water from Chem-Chem spring were taken from the new pipe line at two day intervals before connexion to the Saateni Storage tank, and two samples of the tank water with a seven day interval between them after connexion. All samples were satisfactory, with improvement in the last sample.

Water from the spring at Wete, Pemba, was found to have excretal *B. coli* in 5 c.c., which may be derived from a snake which is living in the masonry of the well.

An Artesian well, sunk in the Baharani cemetery during the year, yielded water of excellent quality, with no presumptive *B. coli* in over 50 c.c. of water.

A bucket well at Chake Chake was found to give presumptive *B. coli* in 0.1 c.c. but excretal *B. coli* was not present.

Rats.—Spleen smears were made from 915 rats, among which were three from rats found dying, but no evidence of plague was found.

(G) HISTOLOGY.

Reports were made on nine sections, all received from the Native Hospital, Zanzibar, three of which were malignant tumours.

(H) AUTOPSIES.

Four autopsies were undertaken at the request of the police, two of them in cases of suspected poisoning in which death proved to be due to double lobar pneumonia, and syphilitic disease of the cerebral arteries respectively.

The third case was found to have a fractured skull as the result of a pedal bicycle accident, and the fourth autopsy was on the body of an infant found on the beach, which proved to be a case of premature birth.

(I) MEDICO-LEGAL.

These call for no special comment.

A. PARASITOLOGY.

| BLOOD.— | Positive. | Negative. | Total. |
|-----------------------------------|-----------|-----------|-------------------|
| Malaria P. Vivax | 680 | 6,105 | 8,643 |
| P. Falciparum | 1,006 | | |
| P. Malaria | 49 | | |
| Undefined plasmodia | 803 | | |
| Micro-filaria (in malaria slides) | 36 | | 36 |
| Spirochæta Obermayeri | 1 | | 1 |
| | | | <hr/> 8,680 <hr/> |
| FÆCES.— | | | |
| Ankylostoma | 1,587 | 45 | 3,870 |
| Ascaris | 166 | | |
| Schistosoma (lateral spine) | 2 | | |
| Strangyloides | 296 | | |
| Tænia Saginata | 5 | | |
| Trichuris | 535 | | |
| Ankylostome ova count | | | 37 |
| Entamœbe histolytica | 8 | 45 | 59 |
| ,, coli | 3 | | |
| ,, unidentified | 3 | | |
| | | | <hr/> 3,966 <hr/> |
| URINE.— | | | |
| Schistosoma | 126 | 392 | 518 |

B. SEROLOGY.

| | | | |
|-------------------------|-----|-------|-------------------|
| C.S. Fluid.—Kahn's test | 1 | 2 | 3 |
| ,, ,, | 823 | 2,901 | 3,724 |
| BLOOD.— | | | |
| Wassermann's reaction | — | 1 | 1 |
| Agglutination test— | | | |
| Bact, typhosum | 30 | 57 | 89 |
| Salmonella | 2 | | |
| | | | <hr/> 3,817 <hr/> |

C. BACTERIOLOGY.

| | | | |
|----------------------------------|---|----|----|
| BLOOD.— | | | |
| Bact. typhosum | 5 | 25 | 34 |
| Streptococcus | 1 | | |
| Staphylococcus | 2 | | |
| Streptococcus and Staphylococcus | 1 | | |
| URINE.— | | | |
| Bact. typhosum | 1 | 29 | 30 |
| Leptospira | — | 1 | 1 |

| | Positive. | Negative. | Total. |
|---|------------|-----------|-------------------|
| FÆCES.— | | | |
| B. dysenteriae—Flexner | 19 | | |
| Sonne | 4 | 101 | 125 |
| Salmonella | 1 | | |
| Bact. typhosum | 3 | 74 | 77 |
| SPUTUM.— | | | |
| B. tuberculosis in films | 170 | 404 | 574 |
| PUS.— | | | |
| Smears for Gonococci (Urethral and Prostatic) | 291 | 516 | 807 |
| Gonococci (Conjunctival) | — | 8 | 8 |
| Gonococci (Cervical) | — | 2 | 2 |
| General examination | | | 2 |
| Leishmania donovani | 1 | 1 | 2 |
| CULTURES.— | | | |
| Prostatic discharge for Gonococci | | 1 | 1 |
| General examination | | | 8 |
| THROAT SWABS.— | | | |
| C. diphtheriae | — | 53 | 53 |
| B. anthracis | — | 1 | 1 |
| NASAL SMEARS.— | | | |
| M. leprae | 13 | 40 | 53 |
| PATHOLOGICAL FLUIDS.— | | | |
| Chancre juice for Spirinema pallidum | 1 | 10 | 11 |
| Pleural fluid | | | 2 |
| Gall-bladder fluid | | | 1 |
| Cyst fluid | | | 1 |
| MISCELLANEOUS.— | | | |
| Skin scraping for fungus | — | 4 | 4 |
| Gum discharge | 1 | 4 | 5 |
| Semen for live spermatozoa | 1 | — | 1 |
| Dental cultures | — | — | 3 |
| VACCINES.— | | | |
| Mixed | | | 6 |
| Coryza | | | 3 |
| Staphylococcus aureus | | | 1 |
| Gonococcus | 1,515 c.c. | | |
| Besredka's anti-virus | 2,000 c.c. | | |
| | | | <hr/> 1,816 <hr/> |
| D. BIOCHEMISTRY. | | | |
| Glucose tolerance test | | | 5 |
| Lævulose tolerance test | | | 1 |
| Blood Sugar estimation | | | 361 |
| Blood Urea estimation | | | 15 |
| Fractional test meals | | | 8 |
| Van den Bergh's reaction | | | 6 |
| Occult blood | | | 1 |
| Quantitative estimation of sugar in urine | | | 1 |
| Quantitative estimation of urea in urine | | | 14 |
| Presence of Sugar in urine | | | 305 |
| Ketone bodies in urine | | | 296 |
| Albumin in urine | | | 5 |
| Pigments in urine | | | 2 |
| | | | <hr/> 1,020 <hr/> |
| E. GENERAL AND CLINICAL PATHOLOGY. | | | |
| BLOOD.— | | | |
| Red cell count and colour index | | | 151 |
| Leukocyte count | | | 59 |
| Leukocyte and differential count | | | 4 |
| Differential count | | | 46 |
| Cooke's count | | | 1 |
| Complete count | | | 2 |
| Platelet count | | | 1 |
| Blood grouping | | | 2 |
| Blood coagulation time | | | 1 |
| C.S.F.—General examination | | | 1 |

SPUTUM.—

| | |
|------------------------------|---|
| Differential leukocyte count | 1 |
|------------------------------|---|

URINE.—

| | |
|-------------------------------|-----|
| General examination | 45 |
| Examination for deposits only | 330 |

644

F. PUBLIC HEALTH.

| | |
|-------|-----|
| Water | 128 |
| Rats | 915 |

1,043

G. HISTOLOGY.

| | |
|--|---|
| General: Multilobular cirrhosis of liver | 1 |
| Uterine curettings | 1 |
| Tuberculosis of lymph gland | 1 |

Benign Tumours:

| | |
|-----------------------|---|
| Myxo-fibroma | 1 |
| Hard Fibroma | 1 |
| Fibro-myoma of uterus | 1 |

Malignant Tumours:

| | |
|--|---|
| Squamous celled carcinoma of parotid gland | 1 |
| Squamous celled carcinoma of rectum | 1 |
| Melanotic sarcoma | 1 |

9

H. AUTOPSIES.

| | |
|---|---|
| Lobar pneumonia | 1 |
| Injuries received from bicycle accident | 1 |
| Premature infant found on the beach | 1 |
| Syphilis of cerebral arteries | 1 |

4

I. MEDICO-LEGAL.

| | |
|---|---|
| Clothing for seminal stains | 3 |
| Knives, daggers, etc., for blood stains | 8 |
| Clothing for blood stains | 4 |
| Swab for gonococcus | 1 |

16
(B) SCIENTIFIC.

Scientific papers published during the year 1936 by members of the Medical Staff:—

NIL.

RETURNS.**TABLE I.****SANCTIONED ESTABLISHMENT, 1936.**

The establishment for 1936, as sanctioned in the Estimates, was as follows:—

ADMINISTRATION DIVISION.

| | |
|-------------------------------|------------|
| Director of Medical Services. | 10 Clerks. |
|-------------------------------|------------|

SPECIAL APPOINTMENTS.

| | |
|------------------------------|-------------------|
| 1 Senior Specialist Officer. | 1 Dental Surgeon. |
|------------------------------|-------------------|

MEDICAL DIVISION—GENERAL.

| | |
|-------------------------------------|------------------------------|
| 1 Senior Medical Officer. | 1 Rural Health Investigator. |
| 8 Medical Officers. | 3 Asiatic Dispensers. |
| 6 Sub-Assistant Surgeons. | 1 Asiatic Cook. |
| 2 Senior Native Medical Assistants. | |

NURSING STAFF.

| | |
|-----------|---------------------|
| 1 Matron. | 10 Nursing Sisters. |
|-----------|---------------------|

SANITATION DIVISION.

| | |
|----------------------------|--------------------------------|
| 1 Sanitary Superintendent. | 4 Asiatic Sanitary Inspectors. |
|----------------------------|--------------------------------|

LABORATORY.

| | |
|-----------------------------------|--|
| 1 Pathologist. | 1 Senior Laboratory Assistant (Asiatic). |
| 1 Laboratory Assistant (Asiatic). | |

TABLE II.
FINANCIAL.

| | 1936. |
|---|--------------|
| | £ |
| A. EXPENDITURE—MEDICAL DEPARTMENT. | |
| Personal Emoluments | ... 23,723 |
| Other Charges:— | |
| General Stores | ... 1,195 |
| Drugs Dental and Surgical Requisites | ... 2,751 |
| Maintenance of Patients | ... 3,671 |
| Passages | ... 1,459 |
| Sanitation Labour | ... 1,227 |
| Grants to Lepers | ... 102 |
| Miscellaneous Services | ... 5,428 |
| | <hr/> 39,556 |
| B. EXPENDITURE—MUNICIPALITY. | |
| Personal Emoluments | ... 2,592 |
| Other Charges:— | |
| Equipments and Stores. Sanitation | ... 263 |
| Sanitation Labour | ... 4,289 |
| | <hr/> 7,144 |
| C. GRANTS-IN-AID. | |
| Zanzibar Maternity Association | ... 230 |
| | <hr/> 230 |
| D. REVENUE. | |
| Hospital Fees, Sale of Drugs, etc. | ... 1,221 |
| Contributions from other dependencies towards the Quarantine Services | ... 2,475 |
| | <hr/> 3,696 |

TABLE III.
RETURN OF STATISTICS OF POPULATION.

All the information available is in the Protectorate Blue Book.

TABLE IV.
METEOROLOGICAL RETURN.

The following is a brief summary of the more important meteorological returns available for the year, compared with the means for the year 1892-1935 in the case of Zanzibar and the mean for the years 1899-1935 in the case of Pemba.

| | Zanzibar (town) | | Pemba (Wesha) | |
|----------------------|-----------------|-------|---------------|--------|
| | 1892-1935 | 1936. | 1899-1935 | 1936. |
| | F | F | F | F |
| Mean of daily maxima | ... 84.4 | 84.7 | 86.3 | 86.5 |
| Mean of daily minima | ... 76.6 | 77.4 | 75.8 | 73.3 |
| Mean of daily range | ... 7.8 | 7.4 | 10.5 | 13.2 |
| Mean | ... 80.5 | 81.1 | 81.1 | 79.9 |
| Rainfall (inches) | ... 60.2 | 77.15 | 72.93 | 100.59 |
| Rainy days | ... 104 | 103 | 161.4 | 149 |

TABLES V AND VI.

Return of Diseases and Deaths for the Year 1936.

| DISEASES | TABLE V | | | | | TABLE VI |
|--|---|----------------------|---------------------------|-----------------|---|--|
| | Remaining in Hospital at end of 1935 | Yearly Admissions | Total Cases Treated | Total Deaths | Remaining in Hospital at end of 1936 | All Cases including both In- and Out- Patients |
| I. EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES. | | | | | | |
| 1. Enteric Group— | | | | | | |
| (a) Typhoid Fever ... | 1 | 8 | ... | 9 | ... | 8 |
| (b) Paratyphoid A ... | ... | ... | ... | ... | ... | ... |
| (c) Paratyphoid B ... | ... | ... | ... | ... | ... | ... |
| (d) Type not defined ... | ... | ... | ... | ... | ... | ... |
| 2. Typhus ... | ... | ... | ... | ... | ... | ... |
| 3. Relapsing Fever ... | ... | ... | ... | ... | ... | ... |
| 4. Undulant Fever ... | ... | ... | ... | ... | ... | ... |
| 5. Malaria— | | | | | | |
| (a) Tertian ... | 3 | 50 | 53 | 2 | 1 | 689 |
| (b) Quartan ... | ... | 3 | 3 | ... | ... | 31 |
| (c) Æstivo-autumnal ... | ... | 100 | 100 | 1 | 1 | 1,029 |
| (d) Clinical ... | ... | 124 | 124 | 11 | 1 | 5,739 |
| (e) Mixed Infections ... | ... | ... | ... | ... | ... | ... |
| (f) Cachexia ... | 1 | 14 | 15 | 1 | ... | 178 |
| (g) Blackwater ... | ... | 8 | 8 | 2 | ... | 17 |
| 6. Smallpox ... | ... | ... | ... | ... | ... | ... |
| Alastrim ... | ... | ... | ... | ... | ... | ... |
| 7. Measles ... | 1 | 1 | 2 | ... | ... | 24 |
| 8. Scarlet Fever ... | ... | ... | ... | ... | ... | ... |
| 9. Whooping Cough ... | ... | ... | ... | ... | ... | 173 |
| 10. Diphtheria ... | ... | ... | ... | ... | ... | ... |
| 11. Influenza ... | 1 | 50 | 51 | ... | ... | 558 |
| 12. Miliary Fever ... | ... | ... | ... | ... | ... | ... |
| 13. Mumps ... | ... | 1 | 1 | ... | ... | 76 |
| 14. Cholera ... | ... | ... | ... | ... | ... | ... |
| 15. Epidemic Diarrhoea ... | ... | ... | ... | ... | ... | ... |
| 16. Dysentery— | | | | | | |
| (a) Amœbic ... | 1 | 2 | 3 | ... | ... | 5 |
| (b) Bacillary ... | 3 | 16 | 19 | 1 | ... | 26 |
| (c) Undefined or due to other causes ... | 1 | 11 | 12 | 3 | 1 | 19 |
| 17. Plague— | | | | | | |
| (a) Bubonic ... | ... | ... | ... | ... | ... | ... |
| (b) Pneumonic... .. | ... | ... | ... | ... | ... | ... |
| (c) Septicæmic ... | ... | ... | ... | ... | ... | ... |
| (d) Undefined ... | ... | ... | ... | ... | ... | ... |
| 18. Yellow Fever ... | ... | ... | ... | ... | ... | ... |
| 19. Spirochaetosis ictero-hæmorrhagica ... | ... | ... | ... | ... | ... | ... |
| 20. Leprosy ... | 93 | 35 | 128 | 17 | 109 | 136 |
| 21. Erysipelas ... | ... | 1 | 1 | ... | ... | 4 |
| 22. Acute Poliomyelitis ... | ... | ... | ... | ... | ... | ... |
| 23. Encephalitis Lethargica ... | ... | ... | ... | ... | ... | ... |
| 24. Epidemic Cerebro-Spinal Fever ... | ... | ... | ... | ... | ... | ... |
| 25. Other Epidemic Diseases— | | | | | | |
| (a) Rubeola (German Measles) ... | ... | ... | ... | ... | ... | 6 |
| (b) Varicella (Chicken-pox) ... | ... | 9 | 9 | ... | ... | 29 |
| (c) Kala-azar ... | ... | ... | ... | ... | ... | ... |
| (d) Phlebotomus Fever ... | ... | ... | ... | ... | ... | ... |
| (e) Dengue ... | ... | ... | ... | ... | ... | 1 |
| (f) Epidemic Dropsy ... | ... | ... | ... | ... | ... | ... |
| (g) Yaws ... | 1 | 17 | 18 | ... | ... | 4,689 |
| (h) Trypanosomiasis ... | ... | ... | ... | ... | ... | ... |
| (i) P.U.O. ... | ... | ... | ... | ... | ... | ... |
| 26. Glanders ... | ... | ... | ... | ... | ... | ... |
| 27. Anthrax ... | ... | ... | ... | ... | ... | ... |
| 28. Rabies ... | ... | ... | ... | ... | ... | ... |
| 29. Tetanus ... | ... | 6 | 6 | 2 | ... | 6 |
| 30. Mycosis ... | ... | ... | ... | ... | ... | 2 |
| 31. Tuberculosis, Pulmonary and Laryngeal ... | 19 | 136 | 155 | 49 | 29 | 204 |
| 32. Tuberculosis of the Meninges or Central Nervous System ... | ... | ... | ... | ... | ... | ... |
| 33. Tuberculosis of the Intestines or Peritoneum ... | ... | ... | ... | ... | ... | ... |
| 34. Tuberculosis of the Vertebral Column ... | 1 | ... | 1 | ... | ... | 1 |
| 35. Tuberculosis of Bones and Joints ... | ... | ... | ... | ... | ... | 3 |
| 36. Tuberculosis of other Organs— | | | | | | |
| (a) Skin or Subcutaneous Tissue (Lupus) ... | ... | 1 | 1 | 1 | ... | 1 |
| (b) Bones ... | ... | ... | ... | ... | ... | ... |
| (c) Lymphatic System ... | ... | 1 | 1 | ... | ... | 1 |
| (d) Genito-urinary ... | ... | ... | ... | ... | ... | ... |
| (e) Other organs ... | ... | ... | ... | ... | ... | ... |
| 37. Tuberculosis disseminated— | | | | | | |
| (a) Acute ... | ... | 1 | 1 | 1 | ... | 1 |
| (b) Chronic ... | ... | ... | ... | ... | ... | ... |
| 38. Syphilis— | | | | | | |
| (a) Primary ... | 1 | 13 | 14 | ... | 1 | 234 |
| (b) Secondary ... | 2 | 22 | 24 | 2 | 5 | 423 |
| (c) Tertiary ... | 2 | 33 | 35 | 1 | 3 | 256 |
| (d) Hereditary... .. | ... | 1 | 1 | ... | 1 | 36 |
| (e) Period not indicated ... | ... | 10 | 10 | ... | ... | 251 |
| (f) Latent ... | ... | ... | ... | ... | ... | ... |

TABLES V AND VI.—*contd.*

| DISEASES | TABLE V | | | | | TABLE VI |
|--|---|----------------------|---------------------------|-----------------|---|--|
| | Remaining in Hospital at end of 1935 | Yearly Admissions | Total Cases Treated | Total Deaths | Remaining in Hospital at end of 1936 | All Cases including both In- and Out- Patients |
| I. EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES <i>contd.</i> | | | | | | |
| 39. Soft Chanere | ... | 2 | 2 | ... | ... | 47 |
| 40. A.—Gonorrhœa and its complications | 1 | 31 | 32 | ... | 4 | 1,300 |
| B.—Stricture | ... | ... | ... | ... | ... | 29 |
| C.—Stricture and Extravasation | ... | ... | ... | ... | ... | ... |
| D.—Gonorrhœal Ophthalmia | ... | 2 | 2 | ... | ... | 27 |
| E.—Gonorrhœal Arthritis | 1 | 25 | 26 | ... | 1 | 168 |
| F.—Salpingitis, etc. | ... | 7 | 7 | ... | ... | 40 |
| G.—Granuloma Venereum | ... | 2 | 2 | ... | ... | 2 |
| 41. Septicæmia | 1 | 16 | 17 | 4 | 1 | 36 |
| 42. Other Infectious Diseases | ... | 17 | 17 | 1 | ... | 173 |
| II. GENERAL DISEASES NOT MENTIONED ABOVE. | | | | | | |
| 43. Cancer or other malignant Tumours of the Buccal Cavity ... | 1 | 1 | 2 | 1 | ... | 2 |
| 44. Cancer or other malignant Tumours of the Stomach or Liver ... | ... | 1 | 1 | 1 | ... | 1 |
| 45. Cancer or other malignant Tumours of the Peritoneum Intestines, Rectum | ... | 2 | 2 | 1 | ... | 2 |
| 46. Cancer or other malignant Tumours of the Female Genital Organs | ... | 1 | 1 | 1 | ... | 1 |
| 47. Cancer or other malignant Tumours of the Breast | ... | 1 | 1 | ... | ... | 1 |
| 48. Cancer or other malignant Tumours of the Skin | ... | 1 | 1 | ... | ... | 1 |
| 49. Cancer or other malignant Tumours of organs not specified ... | ... | 5 | 5 | 1 | ... | 10 |
| 50. Tumours non-malignant | 1 | 21 | 22 | ... | ... | 72 |
| 51. Acute Rheumatism | ... | 5 | 5 | ... | ... | 59 |
| 52. Chronic Rheumatism | ... | 1 | 1 | ... | ... | 485 |
| 52A. Myalgia | ... | ... | ... | ... | ... | 2 |
| 53. Scurvy (including Barlow's Disease) | ... | ... | ... | ... | ... | ... |
| 54. Pellagra | ... | ... | ... | ... | ... | ... |
| 55. Beri-Beri | ... | ... | ... | ... | ... | 6 |
| 56. Rickets | ... | ... | ... | ... | ... | 3 |
| 57. Diabetes (not including Insipidus) | 2 | 21 | 23 | 1 | 2 | 45 |
| 58. Anæmia— | | | | | | |
| (a) Pernicious | ... | 2 | 2 | 1 | ... | 8 |
| (b) Other Anæmias and Chlorosis | ... | 16 | 16 | 4 | ... | 828 |
| 59. Diseases of the Pituitary Body | ... | ... | ... | ... | ... | 1 |
| 60. Diseases of the Thyroid Gland— | | | | | | |
| (a) Exophthalmic Goitre | ... | ... | ... | ... | ... | 1 |
| (b) Other diseases of the Thyroid gland, Myxœdema | ... | 1 | 1 | ... | ... | 7 |
| (c) Others | ... | ... | ... | ... | ... | ... |
| 61. Diseases of the Para-Thyroid Glands | ... | ... | ... | ... | ... | ... |
| 62. Diseases of the Thymus | ... | ... | ... | ... | ... | ... |
| 63. Diseases of the Supra-Renal Glands | ... | ... | ... | ... | ... | ... |
| 64. Diseases of the Spleen | ... | 3 | 3 | ... | ... | ... |
| 65. Leukæmia— | | | | | | |
| (a) Leukæmia | ... | ... | ... | ... | ... | ... |
| (b) Hodgkin's Disease | ... | ... | ... | ... | ... | ... |
| 66. Alcoholism | ... | ... | ... | ... | ... | ... |
| 67. Chronic poisoning by mineral substances (leads, mercury, etc.) | ... | ... | ... | ... | ... | ... |
| 68. Chronic poisoning by organic substances (morphia, cocaine, etc.) | ... | ... | ... | ... | ... | ... |
| 69. Other general diseases— | | | | | | |
| Auto-intoxication | ... | ... | ... | ... | ... | ... |
| Purpura Hæmorrhagica | ... | ... | ... | ... | ... | ... |
| Hæmophilia | ... | ... | ... | ... | ... | ... |
| Diabetes Insipidus | ... | ... | ... | ... | ... | 1 |
| Others | ... | 10 | 10 | ... | ... | 235 |
| III. AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES. | | | | | | |
| 70. Encephalitis (not including Encephalitis Lethargica) | ... | ... | ... | ... | ... | ... |
| 71. Meningitis (not including Tuberculous Meningitis or Cerebro- spinal Meningitis) | ... | 2 | 2 | 2 | ... | 2 |
| 72. Locomotor Ataxia | ... | 1 | 1 | ... | ... | 8 |
| 73. Other affections of the Spinal Cord | 1 | 10 | 11 | 2 | 1 | 13 |
| 74. Apoplexy— | | | | | | |
| (a) Hæmorrhage | ... | 2 | 2 | 2 | ... | 3 |
| (b) Embolism | ... | ... | ... | ... | ... | ... |
| (c) Thrombosis | ... | 1 | 1 | 1 | ... | 2 |
| 75. Paralysis— | | | | | | |
| (a) Hemiplegia | ... | 2 | 2 | ... | ... | 4 |
| (b) Other paralyses | 8 | 9 | 17 | ... | 5 | 22 |
| 76. General Paralysis of the Insane | ... | 9 | 9 | 4 | ... | 14 |
| 77. Other forms of Mental Alienation | 46 | 13 | 59 | 2 | 44 | 44 |
| 78. Epilepsy | ... | 6 | 6 | 2 | ... | 12 |
| 79. Eclampsia Convulsions (non-puerperal) 5 years or over | ... | ... | ... | ... | ... | ... |
| 80. Infantile Convulsions | ... | 2 | 2 | 1 | ... | 3 |
| 81. Chorea | ... | ... | ... | ... | ... | ... |
| 82. A.—Hysteria | ... | 2 | 2 | ... | ... | ... |
| B.—Neuritis | ... | 2 | 2 | ... | ... | 4 |
| C.—Neurasthenia | ... | 2 | 2 | ... | ... | 57 |
| 83. Cerebral Softening | ... | 2 | 2 | ... | ... | 11 |
| 84. Other affections of the Nervous System, such as Paralysis Agitans, Headache, Neuralgia, Insomnia, etc. | ... | 9 | 9 | ... | ... | 2,053 |

TABLES V AND VI.—*contd.*

| DISEASES | TABLE V | | | | | TABLE VI |
|---|---|----------------------|---------------------------|-----------------|---|--|
| | Remaining in Hospital at end of 1935 | Yearly Admissions | Total Cases Treated | Total Deaths | Remaining in Hospital at end of 1936 | Ali Cases including both In- and Out- Patients |
| III. AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES— <i>contd.</i> | | | | | | |
| 85. Affections of the Organs of Vision— | | | | | | |
| (a) Conjunctivitis | ... | 9 | 9 | ... | ... | 798 |
| (b) Trachoma | ... | ... | ... | ... | ... | 620 |
| (c) Tumours of the Eye | ... | ... | ... | ... | ... | ... |
| (d) Iritis | ... | 7 | 7 | ... | ... | 148 |
| (e) Other affections of the Eye | 1 | 54 | 55 | ... | 1 | 2,000 |
| 86. Affections of the Ear or Mastoid Sinus | ... | ... | ... | ... | ... | ... |
| (a) Otitis Media | ... | 9 | 9 | ... | ... | 158 |
| (b) Others | ... | 7 | 7 | 1 | ... | 1,696 |
| IV. AFFECTIONS OF THE CIRCULATORY SYSTEM. | | | | | | |
| 87. Pericarditis | ... | ... | ... | ... | ... | 5 |
| 88. Acute Endocarditis | ... | 3 | 3 | 1 | ... | 3 |
| 89. Angina Pectoris | ... | ... | ... | ... | ... | ... |
| 90. Other Diseases of the Heart— | | | | | | |
| (a) Valvular— | | | | | | |
| Mitral | 1 | 17 | 18 | 4 | 2 | 41 |
| Aortic | ... | ... | ... | ... | ... | 1 |
| Tricuspid | ... | ... | ... | ... | ... | ... |
| Pulmonary | ... | ... | ... | ... | ... | ... |
| Mixed or unspecified | ... | ... | ... | ... | ... | 1 |
| (b) Myocarditis | ... | 6 | 6 | 4 | ... | 13 |
| D.A.H. | ... | ... | ... | ... | ... | 1 |
| Others | ... | 1 | 1 | ... | ... | 7 |
| 91. Diseases of the Arteries— | | | | | | |
| (a) Aneurism | 1 | 1 | 2 | 1 | ... | 3 |
| (b) Arterio-Sclerosis | ... | ... | ... | ... | ... | ... |
| (c) Other diseases | ... | ... | ... | ... | ... | 1 |
| 92. Embolism or Thrombosis (non-cerebral) | ... | ... | ... | ... | ... | ... |
| 93. Diseases of the Veins— | | | | | | |
| Hæmorrhoids | ... | 59 | 59 | 1 | 2 | 180 |
| Varicose Veins | ... | 5 | 5 | ... | ... | 16 |
| Phlebitis | ... | 1 | 1 | ... | ... | 5 |
| 94. Diseases of the Lymphatic System— | | | | | | |
| Lymphangitis | ... | 7 | 7 | ... | ... | 93 |
| Lymphadenitis, Bubo (non-specific) | 6 | 104 | 110 | 2 | 9 | 384 |
| Others | ... | ... | ... | ... | ... | ... |
| 95. Hamorrhage of undetermined cause | ... | 1 | 1 | ... | ... | 12 |
| 96. Other affections of the Circulatory System | ... | 1 | 1 | ... | ... | 1 |
| V. AFFECTIONS OF THE RESPIRATORY SYSTEM. | | | | | | |
| 97. Diseases of the Nasal Passages and accessory sinuses— | | | | | | |
| Adenoids | ... | ... | ... | ... | ... | ... |
| Polypus | ... | 1 | 1 | ... | ... | 26 |
| Rhinitis | ... | 1 | 1 | ... | ... | 53 |
| Coryza | ... | 2 | 2 | ... | ... | 2,573 |
| Others | ... | 8 | 8 | ... | ... | 23 |
| 98. Affections of the Larynx— | | | | | | |
| Laryngitis | ... | 1 | 1 | ... | ... | 36 |
| Tracheitis | ... | ... | ... | ... | ... | ... |
| 99. Bronchitis— | | | | | | |
| (a) Acute | 1 | 46 | 47 | ... | ... | 6,023 |
| (b) Chronic | 1 | 7 | 8 | ... | ... | 171 |
| 100. Broncho-Pneumonia | 1 | 23 | 24 | 9 | ... | 48 |
| 101. Pneumonia— | | | | | | |
| (a) Lobar | 4 | 59 | 63 | 20 | 3 | 67 |
| (b) Unclassified | ... | 3 | 3 | ... | ... | 15 |
| 102. Pleurisy | 2 | 26 | 28 | ... | 3 | 67 |
| 102A. Empyema | ... | 5 | 5 | 2 | ... | 5 |
| 103. Congestion of the Lungs | ... | ... | ... | ... | ... | 1 |
| 104. Gangrene of the Lungs | ... | ... | ... | ... | ... | ... |
| 105. Asthma | ... | 20 | 20 | 1 | 1 | 311 |
| 106. Pulmonary Emphysema | ... | ... | ... | ... | ... | ... |
| 107. Other affections of the Lungs— | | | | | | |
| Pulmonary Spirochaetosis | ... | ... | ... | ... | ... | ... |
| Others | 2 | 3 | 5 | 3 | ... | 18 |
| VI. DISEASES OF THE DIGESTIVE SYSTEM. | | | | | | |
| 108. A.—Diseases of the Teeth or Gums— | | | | | | |
| Caries | ... | 6 | 6 | ... | ... | 6,184 |
| Pyorrhœa | ... | 2 | 2 | ... | ... | 88 |
| Others | ... | 9 | 9 | 1 | 2 | 48 |
| B.—Other affections of the Mouth— | | | | | | |
| Stomatitis | ... | 5 | 5 | ... | ... | 122 |
| Glossitis | ... | 1 | 1 | ... | ... | 29 |
| Others | ... | 3 | 3 | 1 | ... | 98 |
| 109. Affections of the Pharynx or Tonsils— | | | | | | |
| Tonsillitis | ... | 25 | 25 | ... | ... | 358 |
| Pharyngitis | ... | 6 | 6 | ... | ... | 669 |
| Others | ... | 4 | 4 | 2 | ... | 19 |

TABLES V AND VI.—*contd.*

| DISEASES | TABLE V | | | | | TABLE VI |
|--|---|----------------------|---------------------------|-----------------|---|--|
| | Remaining in Hospital at end of 1935 | Yearly Admlssions | Total Cases Treated | Total Deaths | Remaining in Hospital at end of 1936 | All Cases including both In- and Out- Patients |
| VI. DISEASES OF THE DIGESTIVE SYSTEM— <i>contd.</i> | | | | | | |
| 110. Affections of the Oesophagus ... | ... | ... | ... | ... | ... | ... |
| 111. A.—Ulcer of the Stomach ... | ... | 3 | 3 | 1 | ... | 3 |
| B.—Ulcer of the Duodenum ... | ... | 15 | 15 | 4 | 2 | 25 |
| 112. Other affections of the Stomach— | | | | | | |
| Gastritis ... | ... | 9 | 9 | ... | ... | 66 |
| Dyspepsia ... | ... | ... | ... | ... | ... | 941 |
| Others ... | 1 | 1 | 2 | ... | ... | 34 |
| 113. Diarrhœa and Enteritis— | | | | | | |
| Under two years of age ... | ... | 2 | 2 | ... | ... | 77 |
| 114. Diarrhœa and Enteritis— | | | | | | |
| Two years of age and over ... | ... | 50 | 50 | 8 | 1 | 1,013 |
| Colitis ... | ... | 8 | 8 | 1 | 1 | 36 |
| Ulceration ... | ... | 3 | 3 | ... | ... | 3 |
| 114. Colic ... | 1 | 16 | 17 | ... | 1 | 616 |
| 114A. Sprue ... | ... | ... | ... | ... | ... | ... |
| 115. Ankylostomiasis ... | 20 | 176 | 196 | 13 | 20 | 12,608 |
| 116. Diseases due to Intestinal Parasites— | | | | | | |
| (a) Cestoda (Taenia) ... | ... | ... | ... | ... | ... | 1 |
| (b) Trematoda (Flukes) ... | ... | ... | ... | ... | ... | ... |
| (c) Bilharzia ... | ... | ... | ... | ... | ... | 2 |
| (d) Nematoda (other than Ankylostoma)— | | | | | | |
| Ascaris ... | ... | 5 | 5 | ... | 2 | 195 |
| Trichocephalus dispar. ... | ... | ... | ... | ... | ... | ... |
| Trichina ... | ... | ... | ... | ... | ... | 29 |
| Dracunculus ... | ... | ... | ... | ... | ... | ... |
| Strongylus ... | ... | ... | ... | ... | ... | 1 |
| Oxyuris ... | ... | ... | ... | ... | ... | 2 |
| (e) Coccidia ... | ... | ... | ... | ... | ... | ... |
| (f) Other parasites ... | ... | ... | ... | ... | ... | ... |
| (g) Unclassified ... | ... | 5 | 5 | ... | ... | 6 |
| 117. Appendicitis ... | 1 | 10 | 11 | 1 | ... | 14 |
| 118. Hernia ... | 8 | 181 | 189 | 9 | 17 | 328 |
| 119. A.—Affections of the Anus and Rectum— | | | | | | |
| Fistula ... | 1 | 7 | 8 | 1 | ... | 5 |
| Others ... | 1 | 11 | 12 | 2 | 1 | 33 |
| B.—Other affections of the Intestines— | | | | | | |
| Enteroptosis ... | ... | ... | ... | ... | ... | 1 |
| Constipation ... | ... | 11 | 11 | ... | ... | 9,985 |
| Others ... | ... | 5 | 5 | 1 | 1 | 7 |
| 120. Acute Yellow Atrophy of the Liver ... | ... | 1 | 1 | 1 | ... | 1 |
| 121. Hydatid of the Liver ... | ... | ... | ... | ... | ... | 1 |
| 122. Cirrhosis of the Liver— | ... | 18 | 18 | 8 | 4 | 25 |
| (a) Alcoholic ... | ... | ... | ... | ... | ... | ... |
| (b) Other forms ... | 2 | 2 | 4 | 1 | ... | 2 |
| 123. Biliary Calculus ... | ... | ... | ... | ... | ... | ... |
| 124. Other affections of the Liver— | | | | | | |
| Abscess ... | ... | ... | ... | ... | ... | ... |
| Hepatitis ... | ... | 4 | 4 | ... | ... | 32 |
| Cholecystitis ... | ... | 3 | 3 | ... | ... | 9 |
| Jaundice ... | ... | 9 | 9 | ... | ... | 37 |
| Others ... | ... | ... | ... | ... | ... | 3 |
| 125. Diseases of the Pancreas ... | ... | ... | ... | ... | ... | ... |
| 126. Peritonitis (of unknown cause) ... | ... | 6 | 6 | 4 | ... | 7 |
| 127. Other affections of the Digestive System ... | ... | 15 | 15 | 1 | ... | 20 |
| VII. DISEASES OF THE GENITO-URINARY SYSTEM (NON- VENEREAL). | | | | | | |
| 128. Acute Nephritis ... | 2 | 11 | 13 | 4 | ... | 19 |
| 129. Chronic Nephritis ... | 1 | 21 | 22 | 13 | ... | 32 |
| 130. A.—Chyluria ... | ... | ... | ... | ... | ... | ... |
| B.—Schistosomiasis ... | 1 | 18 | 19 | ... | 2 | 550 |
| 131. Other affections of the Kidneys and Ureters— | | | | | | |
| Pyelitis ... | 1 | 23 | 24 | 1 | 1 | 44 |
| Others ... | ... | 3 | 3 | ... | 1 | 27 |
| 132. Urinary Calculus... .. | ... | 3 | 3 | ... | ... | 8 |
| 133. Diseases of the Bladder— | | | | | | |
| Cystitis ... | 1 | 11 | 12 | 1 | ... | 129 |
| Others ... | ... | 19 | 19 | 1 | 1 | 79 |
| 134. Diseases of the Urethra— | | | | | | |
| (a) Stricture ... | ... | 19 | 19 | 1 | 2 | 54 |
| (b) Other ... | 2 | 19 | 21 | 1 | ... | 32 |
| 135. Diseases of the Prostate— | | | | | | |
| Hypertrophy ... | ... | 7 | 7 | 3 | ... | 11 |
| Prostatitis ... | ... | 7 | 7 | 1 | 1 | 9 |
| 136. Diseases (non-Venereal) of the Genital Organs of Man | | | | | | |
| Epididymitis ... | 2 | 16 | 18 | ... | ... | 72 |
| Orchitis ... | 2 | 43 | 45 | 1 | 1 | 308 |
| Hydrocele ... | 18 | 149 | 167 | 4 | 14 | 291 |
| Ulcer of Penis... .. | ... | 15 | 15 | ... | 3 | 412 |
| Varicocele ... | ... | ... | ... | ... | ... | ... |
| Others ... | ... | 53 | 53 | ... | 5 | 375 |

TABLES V AND VI.—*contd.*

| DISEASES | TABLE V | | | | | TABLE VI |
|--|---|----------------------|---------------------------|-----------------|---|--|
| | Remaining in Hospital at end of 1935 | Yearly Admissions | Total Cases Treated | Total Deaths | Remaining in Hospital at end of 1936 | All Cases including both In- and Out- Patients |
| 137. Cysts or other non-malignant Tumours of the Ovaries ... | 1 | ... | 1 | ... | ... | 2 |
| VII. DISEASES OF THE GENITO-URINARY SYSTEM (NON- VENEREAL)— <i>contd.</i> | | | | | | |
| 138. Salpingitis— | | | | | | |
| Abscess of the Palvis ... | ... | 10 | 10 | ... | 2 | 34 |
| 139. Uterine Tumours (non-malignant) ... | ... | 9 | 9 | 2 | 1 | 49 |
| 140. Uterine Hæmorrhage (non-puerperal) ... | ... | ... | ... | ... | ... | 31 |
| 141. A.—Metritis ... | 1 | 11 | 12 | 1 | ... | 26 |
| B.—Other affections of the Female Genital Organs— | | | | | | |
| Displacement of Uterus ... | 2 | 3 | 5 | ... | ... | 184 |
| Amenorrhœa ... | ... | ... | ... | ... | ... | 29 |
| Dysmenorrhœa ... | ... | ... | ... | ... | ... | 53 |
| Leucorrhœa ... | ... | ... | ... | ... | ... | 17 |
| Others ... | ... | 5 | 5 | ... | ... | 135 |
| 142. Diseases of the Breast (non-puerperal)— | | | | | | |
| Mastitis ... | 1 | ... | 1 | ... | ... | 32 |
| Abscess of Breast ... | ... | ... | ... | ... | ... | 12 |
| Others ... | ... | 6 | 6 | ... | ... | 31 |
| VIII. PUERPERAL STATE. | | | | | | |
| 143. A.—Normal Labour ... | 2 | 46 | 48 | ... | ... | 50 |
| 143. A. Delayed Labour ... | ... | 5 | 5 | 1 | ... | 5 |
| B.—Accidents of Pregnancy— | | | | | | |
| (a) Abortion or Miscarriage ... | ... | 3 | 3 | ... | ... | 7 |
| (b) Ectopic Gestation ... | ... | ... | ... | ... | ... | ... |
| (c) Other accidents of Pregnancy ... | ... | 4 | 4 | ... | ... | 7 |
| C.—Ante-natal supervision ... | ... | ... | ... | ... | ... | 29 |
| 144. Puerperal Hæmorrhage ... | ... | 2 | 2 | ... | ... | 2 |
| 145. Other accidents of Parturition ... | ... | 10 | 10 | 2 | ... | 10 |
| 146. Puerperal Septicæmia ... | 1 | 5 | 6 | 4 | ... | 5 |
| 147. Phlegmasia Dolens ... | ... | ... | ... | ... | ... | ... |
| 148. Puerperal Eclampsia ... | ... | ... | ... | ... | ... | ... |
| 149. Sequelæ of Labour ... | ... | ... | ... | ... | ... | ... |
| 150. Puerperal affections of the Breast ... | ... | ... | ... | ... | ... | ... |
| IX. AFFECTIONS OF THE SKIN AND CELLULAR TISSUES. | | | | | | |
| 151. Gangrene ... | 1 | 18 | 19 | 8 | 2 | 34 |
| 152. Boil ... | ... | 1 | 1 | ... | ... | 864 |
| Carbuncle ... | ... | 5 | 5 | ... | ... | 27 |
| 153. Abscess ... | ... | 149 | 149 | 5 | 4 | 1,292 |
| Whitlow and Onychia ... | 13 | 12 | 25 | ... | 1 | 198 |
| Cellulitis ... | 3 | 58 | 61 | 4 | 1 | 992 |
| 154. A.—Tinea ... | ... | ... | ... | ... | ... | 707 |
| B.—Scabies ... | ... | 3 | 3 | ... | ... | 6,984 |
| 155. Other Diseases of the Skin— | | | | | | |
| Erythema ... | ... | ... | ... | ... | ... | 9 |
| Urticaria ... | ... | ... | ... | ... | ... | 24 |
| Eczema ... | 1 | 6 | 7 | ... | ... | 528 |
| Herpes ... | ... | 2 | 2 | ... | ... | 47 |
| Psoriasis ... | ... | 1 | 1 | ... | ... | 7 |
| Elephantiasis ... | 5 | 52 | 57 | 1 | 6 | 126 |
| Myiasis ... | ... | 1 | 1 | ... | ... | 5 |
| Chiggers ... | ... | 1 | 1 | ... | ... | 578 |
| Cutaneous Leishmaniasis... | ... | ... | ... | ... | ... | ... |
| Ulcers ... | 12 | 451 | 463 | 1 | 31 | 22,417 |
| Others ... | 3 | 24 | 27 | ... | ... | 1,498 |
| X. DISEASES OF THE BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS)— | | | | | | |
| 156. Diseases of the Bones— | | | | | | |
| Osteitis ... | ... | 3 | 3 | ... | ... | 16 |
| Periostitis ... | ... | ... | ... | ... | ... | ... |
| Others ... | 1 | 8 | 9 | ... | ... | 21 |
| 157. Diseases of Joints— | | | | | | |
| Arthritis ... | 4 | 20 | 24 | ... | 1 | 817 |
| Synovitis ... | ... | 17 | 17 | ... | 1 | 142 |
| Others ... | ... | ... | ... | ... | ... | ... |
| 158. Other diseases of Bones or Organs of Locomotion— | | | | | | |
| (a) Teno-synovitis ... | ... | ... | ... | ... | ... | ... |
| (b) Ganglion ... | ... | 1 | 1 | ... | ... | 25 |
| (c) Others ... | 6 | 44 | 50 | 1 | 3 | 2,026 |
| XI. MALFORMATIONS. | | | | | | |
| 159. Malformations— | | | | | | |
| Hydrocephalus ... | ... | ... | ... | ... | ... | ... |
| Hypospadias ... | ... | ... | ... | ... | ... | 1 |
| Spina Bifida ... | ... | ... | ... | ... | ... | ... |
| Others ... | ... | 3 | 3 | ... | 1 | 4 |
| XII. DISEASES OF INFANCY. | | | | | | |
| 160. Normal living babies ... | ... | 55 | 55 | ... | ... | 55 |
| 160A. Congenital Debility ... | ... | ... | ... | ... | ... | ... |
| 161. Premature Birth... .. | ... | ... | ... | ... | ... | ... |

TABLES V AND VI.—*contd.*

| DISEASES | TABLE V | | | | | TABLE VI |
|--|---|----------------------|---------------------------|-----------------|---|--|
| | Remaining in Hospital at end of 1935 | Yearly Admissions | Total Cases Treated | Total Deaths | Remaining in Hospital at end of 1936 | All Cases including both In- and Out- Patients |
| 162. Other affections of Infancy | 1 | 1 | 2 | 2 | ... | 24 |
| 162A. Babies still-born | ... | ... | ... | ... | ... | ... |
| 163. Infant neglect (infants of three months or over) ... | ... | ... | ... | ... | ... | ... |
| XIII. AFFECTIONS OF OLD AGE. | | | | | | |
| 164. Senility | 168 | 334 | 502 | 135 | 112 | 312 |
| Senile Dementia | ... | ... | ... | ... | ... | ... |
| XIV. AFFECTIONS PRODUCED BY EXTERNAL CAUSES. | | | | | | |
| 165. Suicide by Poisoning | ... | ... | ... | ... | ... | ... |
| 166. Corrosive Poisoning (intentional) | ... | ... | ... | ... | ... | ... |
| 167. Suicide by Gas Poisoning | ... | ... | ... | ... | ... | ... |
| 168. Suicide by Hanging or Strangulation | ... | ... | ... | ... | ... | ... |
| 169. Suicide by Drowning | ... | ... | ... | ... | ... | ... |
| 170. Suicide by Firearms | ... | ... | ... | ... | ... | ... |
| 171. Suicide by cutting or stabbing instruments | ... | ... | ... | ... | ... | ... |
| 172. Suicide by jumping from a height | ... | ... | ... | ... | ... | ... |
| 173. Suicide by crushing | ... | ... | ... | ... | ... | ... |
| 174. Other suicides | ... | ... | ... | ... | ... | ... |
| 175. Food Poisoning— | ... | ... | ... | ... | ... | ... |
| Botulism | ... | ... | ... | ... | ... | ... |
| 176. Attacks of poisonous animals— | ... | ... | ... | ... | ... | ... |
| Snake Bite | ... | 3 | 3 | 1 | 1 | 16 |
| Insect Bite | ... | ... | ... | ... | ... | 70 |
| 177. Other accidental Poisonings... .. | ... | 5 | 5 | ... | ... | 10 |
| 178. Burns (by fire) | ... | 26 | 26 | 3 | ... | 446 |
| 179. Burns (other than by fire) | ... | 6 | 6 | 1 | ... | 61 |
| 180. Suffocation (accidental) | ... | ... | ... | ... | ... | 1 |
| 181. Poisoning by Gas (accidental) | ... | ... | ... | ... | ... | ... |
| 182. Drowning (accidental) | ... | ... | ... | ... | ... | 2 |
| 183. Wounds (by Firearms, war excepted) | ... | 3 | 3 | 2 | ... | 4 |
| 184. Wounds (by cutting or stabbing instruments) | 3 | 68 | 71 | 1 | 1 | 2,518 |
| 185. Wounds (by fall)... .. | 6 | 118 | 124 | ... | 9 | 2,878 |
| 186. Wounds (in Mines or Quarries) | ... | 1 | 1 | ... | ... | 1 |
| 187. Wounds (by Machinery) | ... | 40 | 40 | ... | 4 | 513 |
| 188. Wounds (crushing, <i>e. g.</i> , railway accidents, etc.) | ... | ... | ... | ... | ... | ... |
| 189. Injuries inflicted by Animals, Bite, Kicks, etc.) | ... | 6 | 6 | ... | 2 | 141 |
| 190. Wounds inflicted on Active Service | ... | ... | ... | ... | ... | ... |
| 191. Executions of civilians by belligerents... .. | ... | ... | ... | ... | ... | ... |
| 192. A.—Over fatigue... .. | ... | ... | ... | ... | ... | ... |
| B.—Hunger or Thirst | ... | 1 | 1 | 1 | ... | 1 |
| 193. Exposure to Cold, Frost bite, etc | ... | ... | ... | ... | ... | ... |
| 194. Exposure to Heat— | ... | ... | ... | ... | ... | ... |
| Heatstroke | ... | ... | ... | ... | ... | 3 |
| Sunstroke | ... | ... | ... | ... | ... | ... |
| 195. Lightning Stroke... .. | ... | ... | ... | ... | ... | ... |
| 196. Electric Shock | ... | ... | ... | ... | ... | ... |
| 197. Murder by Firearms | ... | ... | ... | ... | ... | ... |
| 198. Murder by cutting or stabbing instruments | ... | ... | ... | ... | ... | ... |
| 199. Murder by other means | ... | ... | ... | ... | ... | ... |
| 200. Infanticide (murder of an infant under one year)... .. | ... | ... | ... | ... | ... | ... |
| 201. A.—Dislocation | ... | 5 | 5 | ... | ... | 44 |
| B.—Sprain | ... | 9 | 9 | ... | ... | 332 |
| C.—Fracture | 8 | 76 | 84 | 6 | 4 | 102 |
| 202. Other external Injuries | 1 | 18 | 19 | 2 | ... | 3,527 |
| 203. Deaths by Violence of unknown case | ... | ... | ... | ... | ... | ... |
| XV. ILL-DEFINED DISEASES. | | | | | | |
| 204. Sudden Death (cause unknown) | ... | ... | ... | ... | ... | ... |
| 205. A.—Diseases not already specified or ill-defined— | ... | ... | ... | ... | ... | ... |
| Ascites | ... | 3 | 3 | ... | 1 | 11 |
| Edema | ... | ... | ... | ... | ... | 31 |
| Asthenia | 23 | 72 | 95 | 19 | 17 | 1,122 |
| Shock | ... | 4 | 4 | ... | ... | 5 |
| Hyperpyrexia | ... | ... | ... | ... | ... | 1 |
| B.—Malingering | 1 | ... | 1 | ... | ... | 14 |
| XVI. DISEASES, THE TOTAL OF WHICH HAVE NOT CAUSED 10 DEATHS, INCLUDING P.U.O. AND N.Y.D. | | | | | | |
| ... | 2 | 49 | 51 | 1 | 5 | 2,960 |
| Total, Sections I to XVI... .. | 548 | 4,413 | 4,961 | 470 | 524 | 1,28,235 |
| Examinations | ... | ... | ... | ... | ... | 3,480 |
| GRAND TOTAL | 548 | 4,413 | 4,961 | 470 | 524 | 1,31,715 |

APPENDIX I.

REGISTRATION OF MEDICAL PRACTITIONERS, DENTISTS AND DRUGGISTS.

At the beginning and at the end of the year there were on the Register 24 medical practitioners, 9 licensed medical practitioners, 5 dentists and 19 druggists. Actually resident in the Protectorate at the end of the year there were 20 registered medical practitioners, 9 licensed medical practitioners, 2 dentists and 19 druggists of whom 10 registered medical practitioners, 8 licensed medical practitioners, 5 druggists and 1 dentist were in Government Service.

APPENDIX II.

CONTROL OF OPIUM.

The following are the particulars regarding opium addicts :—

| | 1934. | | 1935. | | 1936. | |
|--|--------------|----|-----------|----|-----------|----|
| | M. | F. | M. | F. | M. | F. |
| Number of opium addicts remaining from the previous year | ... 51 | 19 | 42 | 16 | 41 | 15 |
| Number of applications for permit during the year | ... 2 | — | 5 | — | 1 | — |
| Number of permits granted during the year | ... 1 | — | 4 | — | 1 | — |
| Number of permits refused during the year | ... 1 | — | 1 | — | — | — |
| Number of permits cancelled :— | | | | | | |
| (a) Owing to death | ... 2 | 1 | — | 1 | 2 | — |
| (b) Owing to other cause | ... 8 | 2 | 5 | — | 4 | 1 |
| Number of opium addicts remaining at the end of the year | ... 42 | 16 | 41 | 15 | 39 | 16 |
| | OZS. | | OZS. | | OZS. | |
| Amount of opium issued to addicts during the year | ... 424 | | 392½ | | 384½ | |
| | Shs. Cts. | | Shs. Cts. | | Shs. Cts. | |
| Amount received in payment for opium issued | ... 3,976-92 | | 3,607-50 | | 3,820-67 | |

APPENDIX III.

NOTES ON TWENTY-FIVE YEARS OF MEDICAL PROGRESS
PUBLISHED ON THE OCCASION OF THE SILVER JUBILEE OF
HIS HIGHNESS SEYYID SIR KHALIFA BIN HARUB,
G.C.M.G., G.B.E.

By

S. W. T. LEE, M.D., D.P.H.

Before it is possible to evaluate the advances which have taken place in the Medical and Public Health work in the Protectorate of Zanzibar during the last quarter of a century, that is during the reign of His Highness Seyyid Sir Khalifa bin Harub, G.C.M.G., G.B.E., it is necessary to consider briefly what the conditions were in former years.

In the early part of the nineteenth century there is ample evidence to show that Zanzibar was an extremely insalubrious place. In 1835 Ruschengerger speaks of the difficulties encountered when strolling on the Mtoni beaches in the afternoon—one was liable to be set upon by the packs of savage pariah dogs whose function it was to dispose of the corpses of slaves, and others, whose bodies had been thrown on to the beach.

Later, in 1857, Burton mentions the trials of the pedestrian in Zanzibar Town in the following words :—“Here (in the town) as on the odious sands the festering impurities render strolling a task that requires some resolution and the streets are unfit for a decent woman to walk through”. Even if the urge for exercise was strong it is probable that the creek side walk was not followed

as Burton remarks "every evening a pestilential, sepulchral miasma arises from the creek, covering the skin with a clammy sweat and the water exhales a fetor which causes candles to burn dim and which changes the sound of the human voice".

Under these circumstances it is not surprising that the Public Health left something to be desired and in 1859 Colonel Rigby recorded that about 25,000 deaths had occurred as a result of cholera in Zanzibar Town and also that most of the coastal villages had been depopulated. He did mention, too, as a matter of minor importance that small-pox outbreaks occurred every year in Zanzibar and claimed many victims.

Still reforms were in hand and in 1861 Rigby was able to write that the purer water supply to Zanzibar Town, consequent on the building of the aqueduct from Chem Chem by Seyyid Barghash, had improved the public health very greatly. He added that greater attention to cleanliness and decency and the cessation of the habit of throwing dead bodies onto the beach, and out on the outskirts of the town, had done much to make Zanzibar a pleasanter place to live in.

But even then neither Zanzibar Town nor the Islands of Pemba and Zanzibar could be described as healthy because, in addition to the poor sanitary state prevailing, there were no hospitals or doctors, except one attached to the British Consul's office, and there was no attempt made to better town or country sanitation or even to arrange for a system of conservancy in towns.

Such were the circumstances prevailing in the country when plague broke out in 1899. It continued to rage in the islands for some years and it appears to have died out about 1905, after terrific efforts on the part of the newly formed Health Department to teach the fact that dirt and rubbish and poor class buildings encouraged the presence of rats and plague followed automatically. The greatest mortality was amongst the Indian Community living to the West of the creek and very few cases occurred in the Ngambo area. The cost of this outbreak to the country was estimated by the acting Consul, Mr. Sinclair, at over £1,000,000 sterling.

By 1911, twenty-five years ago, conditions had improved a little but malaria still took a steady toll each year of the urban and rural population although a "mosquito brigade" was formed to control mosquito breeding in Zanzibar Town during the latter part of the year. In the same year plans for a hospital for Europeans were drawn up and two country dispensaries at Chwaka and Mkoko-toni were established as ancillary to the hospital in Zanzibar Town. In this connexion it is interesting to recall the fact, vouched for by His Highness the Sultan, that in these early days of medical work the distrust of western medicine was so great that certain classes of the population expected to be paid to allow themselves to be cured of their diseases, and those so cured, confidently expected their benefactor to assume responsibility for their material comfort for the remainder of their lives.

The start made in 1911 in applying modern methods could not be expected, of course, to eradicate entirely the endemic diseases which afflicted the Islands. The following review of the chief of them, cholera, plague and small-pox make it clear that they were only got rid of slowly and even to-day the utmost vigilance is necessary to prevent a recurrence of the catastrophies of the past. Malaria too, was rife, but conditions have improved and are improving.

In 1911, as in several subsequent years, small-pox was epidemic and although vaccinators were provided the people distrusted the efficacy of these preventive measures, and many refused to be vaccinated or to consult a doctor when ill. Persistent concealment of cases of small-pox was the rule and kept the infection alive so that small-pox outbreaks continued to crop up year after year. No very large scale small-pox outbreaks did occur and this was due, of course, to the fact that, despite the difficulties in the way, very large numbers of people had been vaccinated every year and thus a large "reserve" of protected people accumulated and diminished the risks of serious epidemics such as had been a feature in the past; of late years the Islands have been free from small-pox except for a few sporadic cases resulting from infected people coming

from India—but even this danger is not great now owing to the present day widespread acceptance of vaccination by the population of the country.

Cholera broke out again in 1912 and some 900 deaths were recorded—chiefly in the coastal villages because Zanzibar itself, by that time, was very largely provided with a pure and uncontaminated water supply. It was thought that the 900 known deaths represented only a small proportion of the deaths which actually occurred. But cholera is a disease of the past, it is improbable that any serious epidemic could occur in Zanzibar town and even if it did break out in the country the present day rapid communications and close administrative supervision would facilitate preventive measures to such an extent that control could be exercised over an outbreak in a very short time.

Plague is a rather more imminent danger. It has occurred in the past on many occasions and it is probable that sooner or later it may again gain a footing in Zanzibar town. The crowded bazaar area will then become a death trap, as it is only with difficulty that the most elementary hygienic precautions can be insisted upon throughout this grossly overbuilt area. It is probable that here, as in India, no amount of sanitary control can entirely prevent plague outbreaks in the future on account of the apathy, poverty and indifference of those most likely to be affected.

Malaria in Zanzibar town is largely under control and it is rare for a person to become infected who does not spend evenings or nights in the country. In the rural areas, too, some progress has been made. Most people now associate fever and mosquitoes. Mosquito nets are used to a large extent and people are becoming more willing to attend a hospital or dispensary for treatment when infected.

It is seen that from 1911 onwards till the present day very definite, if gradual, progress has been made in every aspect of medical work in the Protectorate—and possibly the following table showing details of the number of patients seen at Government hospitals and the cost of the staff, etc., in 1911, as contrasted with 1936 will make clear how much medical work has increased.

| | 1911 | 1936 |
|---|-------------|---------|
| In patients at all Government hospitals and dispensaries | ... 2,829 | 4,207 |
| Out patients at all Government hospitals and dispensaries | ... 13,228 | 132,586 |
| Cost of Medical and Public Health Departments | ... £17,227 | £45,404 |
| Percentage of expenditure of the country represented by above costs | ... 9% | 9.9% |

Up till 1936 expenditure on the medical department had increased just over $2\frac{1}{2}$ times whilst the number of out-patients dealt with had increased 10 times and the in-patients had doubled in number. It is perhaps worth enumerating here the special departments of medical activity which serve the people of Zanzibar.

In Zanzibar town there are available 191 hospital beds and in the district 192, including Walezo poor house and leper settlement. Out-patients are dealt with at the Zanzibar hospital and separate departments are now provided for men and women—the latter being staffed entirely by women under the charge of a Lady Medical Officer.

A Dental Surgeon deals with out-patients of all races every day, and a special clinic for diseases of the eye was established during 1935. A Maternity home, under the control of the Zanzibar Maternity Association is conducted in the town and the work is carried out by qualified midwives who are assisted, when necessary, by the Lady Medical Officer.

In the country districts of Zanzibar there are 15 dispensaries in the charge of trained dispensers and controlled by a district Medical Officer who also undertakes the examination and treatment of all school children. Visits are paid to these centres by the Lady Medical Officer and her staff to treat women and children.

Also a mental hospital is maintained in the town, and an infectious disease hospital is situated at Gulioni.

In Pemba there are three hospitals and seven dispensaries which are supervised by two Medical Officers.

Additional, but less well known, responsibilities of the medical departments are that most of the cleaning and refuse removal in the towns, in the islands, is undertaken. In the case of Zanzibar town it is no light matter to remove and dispose of 40,000 tons of refuse every year. Port health and quarantine work takes up a considerable amount of time; the duties of the joint building authority are onerous and finally routine antimalarial measures in towns demand constant supervision as does the care of those actually suffering from infectious diseases; the prevention of the spread of such diseases is, perhaps, one of the most important duties of the department.

This is the present day state of affairs, but it is recognized that much remains to be done and more is hoped for from the future. If additional beds were available in more modern hospitals in Pemba and Zanzibar, combined with rather better type dispensaries the purely medical needs of the country would be met adequately—these desiderata may materialize gradually. But it is on the side of public health and preventive medicine that further progress is essential and the following is an outline of what is being attempted.

The health of the rural population of both islands is undermined from birth by infestations with ankylostome worms, malnutrition, malaria, venereal diseases, ulcers, etc. It is clearly impossible to breed a healthy and energetic people who have so much ill health to contend with and it is the duty of the Public Health Department to cope with the situation so far as is possible. This is being done in a variety of ways—the first being to train local men in public health work and to have them posted in the country districts. They will teach, on the spot, how to avoid hookworm and they take every opportunity of improving housing, water supplies and living conditions generally and they will urge on the people the need for an adequate diet and will persuade sick people to attend at dispensaries or hospitals for treatment.

In both rural and urban districts much attention is being paid to the health of the school children and regular medical inspection and advice has achieved some good results. The future of the race rests in the hands of the children and it would be a gloomy future if the children were to remain largely infected with preventable diseases.

In towns it has become increasingly obvious that some systematic planning for the future must be undertaken if living conditions are to improve. Every man has a right to adequate air, light and ventilation but few people, in Zanzibar town get their due in this respect.
